FOOD INDUSTRIES

INSPECTING MILK BOTTLES

JUNE, 1935

McGRAW-HILL PUBLISHING COMPANY, INC.

ECONOMY

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FOOD INDUSTRIES

PRODUCTION • ENGINEERING • DISTRIBUTION

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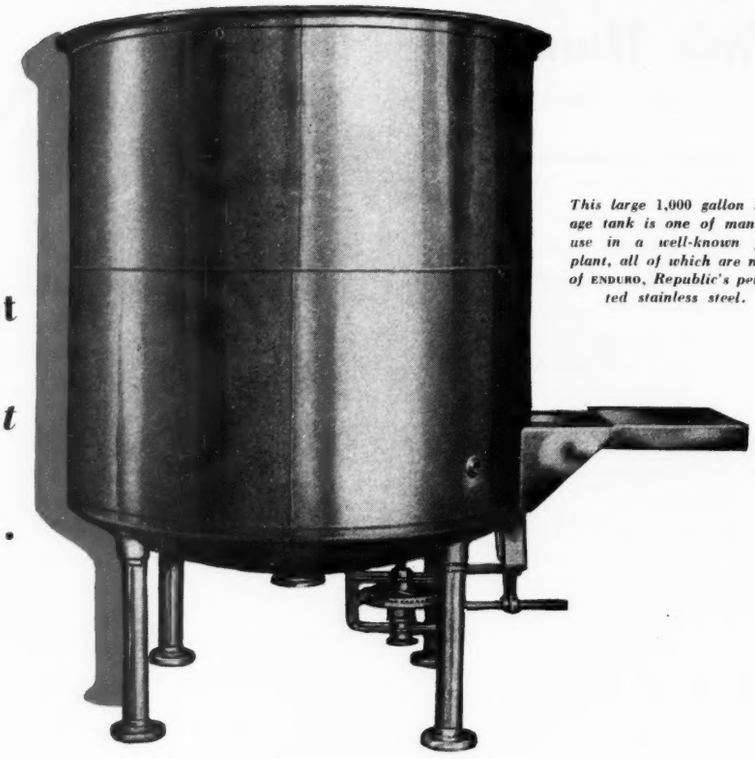

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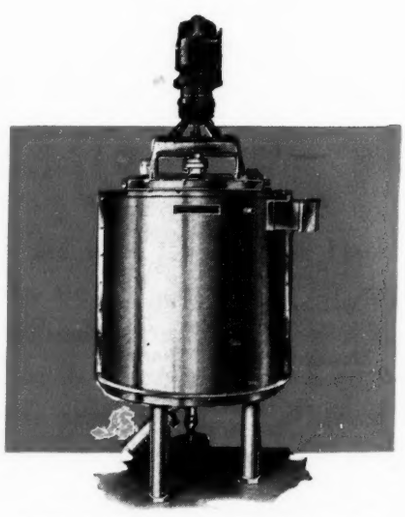

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FOOD INDUSTRIES

PRODUCTION • ENGINEERING • DISTRIBUTION

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Laurence V. Burton, Editor

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JUNE 1935

THE TALK OF THE INDUSTRY

SOMEBODY is overlooking what appears to us as a good bet. At least there is one non-utilized sales appeal for tomato juice that strikes this column of sagacity as potentially more effective than the other reasons for drinking it. Now mind you, we said reasons. We are not concerned with those pitiably emotional souls who, without a logical reason, seem to like tomato juice and drink it solely to please their palates. We ourselves are nothing if not logical. Our appeal to reason would increase the consumption of tomato juice very materially if the idea catches the imagination of the population.

Of course, our sense of delicacy and due regard to the proprieties makes it extremely difficult to come right out brazenly and blatantly with what we have in mind. Such a situation requires much circumlocution and the carefully studied forms of discreet innuendo so dear to the advertising copywriter. Not for the world would we consent to use the horrid physiological terms that would accurately describe the beneficial effects of a great, big drink of tomato juice.

Ah no! we are much too refined—perhaps we should say nasty-nice—to even hint that people who can afford to drink tomato juice possess the same physiological functions as the vulgar crowd who employ short, antiquated, Anglo-Saxon words in their daily speech.

If we were advertising this benign function of tomato juice, we would start an argument about the best time of day to drink it. And then by adroit maneuvering the public would be led to discover that the happiest early-morning routine would consist of a trip to the refrigerator as soon as the alarm clock can be shut off, there to consume a big tumblerful of the juice, even before brushing their teeth or indulging in their daily ablutions or morning exercises.

Banish the coated tongue! Away with dark circles under the eyes! Start the day with tomato juice (but be sure to start it early enough) and have a clear head. Businessmen can save fifteen minutes of the working day! Let nature take its course! Hotcha! also Whoopee!!

You can see that we have already begun to practice what we preach.

SOMEHOW the traditional placard of the picket who marches dejectedly back and forth in front of a business house seems to miss fire. If, instead of reading "Unfair to Organized Labor," the placard read "Unfair to Labor," or "I asked for a $3 raise and got fired,"—then other folks would better understand.

Most of us have been manual workers at one time or another, but relatively few of us ever belonged to that aristocracy known as "Organized Labor." This department, for example, has worn overalls, carried a dinner-pail, and punched No. 16257 on a time clock for years. If that does not qualify us as a laborer of modest experience let it be known that in the days when this department could muscle a 50 lb. weight in each hand it was a twelve-hour day, a seven-day week, "two weeks about," at 17½ cents per hour. It took two years to save enough to buy one share of stock in the employing corporation, thereby earning for us the perpetual contempt of our fellow workers, for henceforth we were known as a company man.

Work, hard work, workers and all their troubles are all old friends, and deserving of sympathy and friendliness. But out of a ripe experience we do not see why one set of workers, obviously the aristocrats of labordom, should merit a preferred brand of sympathy.

Hence we raise a question about W.A.D.—the Works Allotments Division, with Secretary Harold L. Ickes as chairman—which will decide on what project the $4,000,000,000 relief appropriation will be spent. Why, on the W.A.D. is there no representative of unorganized labor?

SPEAKING of formulas for manufactured foods—we receive all sorts of inquiries, nearly every day,

some of which we are incapable of answering with any degree of sense. Many of them would be ridiculous were it not for the tragedy one can read between the lines.

Some letters come as illiterate penciled scrawls on post-cards; some come on social stationery with occasional embossed emblems reminiscent of prosperous days; some come on cheap hotel stationery with directions to reply to a different street address, while others come on business letterheads from business concerns.

Over half of our formula inquiries are from women, referred to us by women's magazines and tell us tales of recent widowhood, or husbands long out of work, and nearly all of them want to go into the manufacture of potato chips.

Then there are requests such as the following received on a postal card in March: "Plese to send me a formula for potatos also for cabbagge." And when we answer by asking what they really want to know, it appears that they have either run out of postage stamps or of curiosity.

On the serious side, however, we get requests for formulas from business houses which often place us in an awkward position. To be sure it is inevitable that, out of our composite production experience, the editorial staff has acquired a great many formulas some of which are of well-known, nationally advertised foods. But these are not for sale nor for gift at any price on the basis that though we are custodians, these formulas are not really our property, and that anyhow they would not do the recipient any good.

Our reasoning on the last point is that a newcomer could not sell any more goods of a given make than are now being sold by the owner of that brand. To illustrate: we have not the slightest doubt that Heinz has plenty of catsup and pickles or that Campbell still has plenty of soup for sale, or that National Biscuit or Loose-Wiles can supply all the crackers that the trade will take. Nor do we believe that Best Foods is out of mayonnaise or Kraft out of salad dressing. And furthermore, if a person were able to duplicate these products we don't believe he could possibly produce at a lower cost and thereby undersell the maker of the genuine article.

Those are the reasons why we believe that it would not do the newcomer any good to be in possession of the formulas for well-known foods. And furthermore, we have never known of a formula that was given away or was for sale that was worth a hoot. Of course, we admit that it is only a justification for our attitude, and that we hardly expect anyone to be convinced until he, too, has been through the mill.

Stick Together!

ANYONE who is permitted to know the whole truth of many recent episodes in Washington—in particular those concerning the recent relations between the Chamber of Commerce of the United States, the Business Planning and Advisory Council headed by H. P. Kendall, and the White House—can say with positive assurance that the accounts released to the daily press are only half-truths so distorted that the public is led to believe the exact opposite of what really happened.

The Business Advisory Council, the so-called Roper committee, did not tell the President it would uphold his hands while he fought the depression. That idea emanated from the White House and its purpose was to divide the ranks of business by creating the impression that there was a split between business groups—that the Chamber of Commerce did not know what it was talking about.

To say that the Business Advisory Council did not tell the President it would uphold his hands does not mean that the business men constituting this Council are trying to obstruct his efforts to overcome the depression. Quite the contrary—they are trying to use their ability in the way best calculated to restore prosperity. They differed with the President on the *method* and therefore said nothing about upholding his hands.

It is imperative that business sticks together, that business presents the united front, and realizes that the Administration is using a well-known political device to bring about a split in the opposition.

Most business men are schooled in the art of trading, of giving and taking, and of compromise. It is important that they get together on a common program and stick to it. They must not allow the tactics of the politician to becloud the issue. Likewise, those who stay home, and their associates and subordinates must also unite behind their respective leaders.

Unless business men unite and stick together they can expect to see all manner of haywire schemes and crazy economic measures put over on them and can expect to serve under

Hors d'Oeuvres

• A San Franciscoan has purchased an old ferry boat which he will convert into a floating cannery and feed mill. The gentleman probably aspires to go up in business on a rising tide.

• *Elbow action has been taken out of whipped cream making. A new device which looks like a seltzer syphon and which is charged with "laughing gas" does the trick. Push a button and out comes the cream, inflated by 450 per cent.*

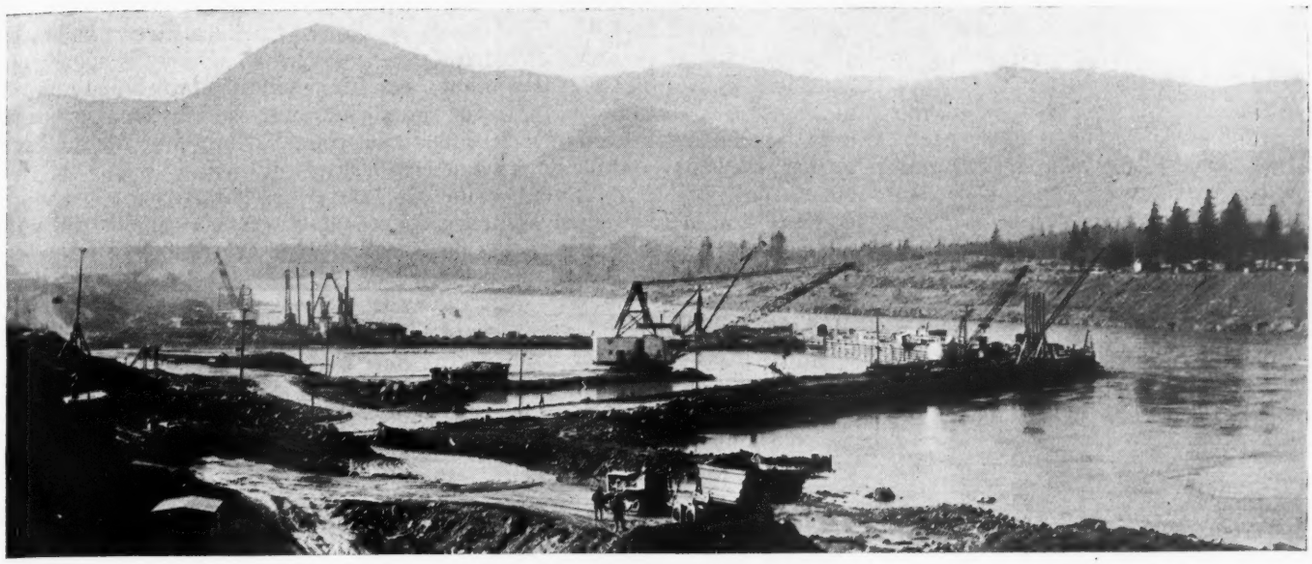
• If you think female fashions haven't gone nutty, listen to this: All kinds of nuts—walnuts, hazels, acorns, hickories, Brazils and filberts—are being used for buttons on knit wear, suits, sports wear, belts and sweaters.

• *Four thousand farmers recently converged upon Washington to give support to the AAA program. Most anyone would like a system that takes money out of other people's pockets and puts it into theirs.*

• *An oldtimer in the ice cream industry got his start in 1893 by getting up at the crack of day, making a fire under the boiler, feeding and currying the horse, making the mix, freezing the cream and delivering it. He attributed his success to having learned the business from the hoof up.*

• Young cereal grasses, such as wheat, barley, rye and oats, have a biological value from 200 to 500 per cent greater than any of twenty common vegetables, including spinach. So says a paper read before American Chemical Society. Now we won't have to pay farmers for reducing their crops. We can just eat the stuff before it matures.

• *"From cow to cocktail" is the slogan of a Connecticut company which soon will start making a high-power liquor from cow's milk. To be known as lacti-liquor, it is patterned after the famous Russian kumiss, made from mare's milk.*



BONNEVILLE DAM

Beginning the construction of the 72-ft. Bonneville dam on the Columbia River—the largest salmon breeding ground in the world. Salmon canners and aquatic biologists are dubious about the effect of this barrier. It may mean extinction of an entire industry.

bureaucratic domination that will prevent all future freedom of action.

Constitutionality

SUPREME COURT action holding that the railroad pension law, passed a year ago, was unconstitutional affords the first great setback to the reform plan of the New Deal. Other losses have been relatively minor in significance and the Administration is seeking some way in which to make this setback less of a handicap than it first appeared.

The President is determined to go forward with his reform program. It appears that he is going to exert just as full pressure on Congress as though the Court had not spoken as it did on rail labor. In other words, he will press for legislation on many subjects and let the courts overrule what they must.

This course of action is inspired by the hope that the majority of the Court may prove to be liberal by the time other legislation of fundamental importance in New Deal reform reaches final adjudication. It is always possible that the death of one of the more conservative jurists would completely change the complexion of the Court, since any new appointee obviously would be of the progressive type during the present Administration. Also there is always the hope that even the present Court will be more liberal in its stretching of Constitutional rights for the Federal Government in later findings.

Members of Congress, particularly members of the Senate, are less inclined thus to fly in the face of judicial findings and pass more laws merely to see them declared unconstitutional. Hence, regardless of the wish of the President, there is some definite deterrent to careless, all-encompassing legislation as a result of the rail-labor finding. This is small comfort to the conservative thinkers, but something nevertheless.

Government Misinformation

THE dairy industry in the Memphis area has been getting along quite satisfactorily without the help of a marketing agreement or other AAA legislation, writes one of our readers in the dairy business in that region. "The Consumers Counsel, in his guide, persists in quoting milk prices in our territory at 11.3 cents per quart, although several times we have called his attention to the fact that our standard milk, which tests 4 per cent butter fat, retails for 10 cents per quart. We sell a premium milk, testing 5 per cent butter fat at 12 cents per quart retail, and naturally only a small proportion of the total consumption of the Memphis market consists of this premium milk."

It is a mystery to all engaged in industry to know what the government expects to gain by permitting its various so-called consumer agencies to put out untruths of this character.

There was a time when government statistics were regarded as almost sacred, but since the New Deal has come into effect, with so many plain, downright nuts who are grinding the ax of their own hobbies, any prudent man begins to look at statistics emanating from Washington with a great big question-mark.

Bonneville vs. Salmon

SALMON fishermen and canners on the Pacific Coast are much alarmed over the possible extinction of their source of supply by the construction of the Bonneville dam. This work-relief project is to be a barrier 72 ft. high across the Columbia River—the greatest salmon breeding ground in the United States. If the fish on a spawning migration cannot surmount the dam the run of fish will disappear in a few years. Furthermore, if the young fingerling salmon cannot get safely downstream the run of fish will also be lost.

The difficulty is that the army engineers who are building the dam are engineers trying to solve a biological problem. The fish biologists frankly do not yet know what to specify in the matter of fish ways and claim that only careful research and experimentation can solve it. But the army engineers want to push on with the work, give employment and get the job done.

FOOD INDUSTRIES is informed that the original appropriation of $4,200,000 for fish ways was arbitrarily cut $1,000,000 on the grounds that the engineers thought $3,200,000 was enough to spend on fish.

Well, perhaps it is. We hope so, at any rate. But the dangers of haste in construction and such arbitrary decisions lie in the fact that,

if an error is made so that the salmon cannot easily get up and down stream, the valuable salmon runs will soon be a thing of the past.

The pity of it is that Bonneville hydro-electric power is not needed. The Pacific Northwest now has more power available than it is using, and the haste to construct this new dam jeopardizes an industry worth from $15 to $25,000,000 a year. Indeed, one estimate of the situation says that not over 20 per cent of the potential hydro-electric power now being developed on the Columbia River could ever be used if it were actually given away.

It looks like another New Deal folly, the cost of which can conceivably be the extinction of an industry that annually yields a return of $15,000,000 compared to power sales that now run, at about 31 per cent of already existing capacity, to the tune of $45,000,000. There is no need for haste.

Wine or Wines

MISTAKES are hard to down, a fact that is again demonstrated by the way in which the wine industry clings to the unfortunate sales promotion propaganda adopted immediately upon repeal in 1933. Even yet, it does not seem to be clear to this industry that a "snob" appeal will not build a "mass" market.

Who does not recall the deluge of printed matter poured forth at that time, in an attempt to make Americans wine conscious. It was more than successful, it made them self-conscious. After being thoroughly instructed as to the color and vintage of wine to be used with every possible course of the most elaborate dinner, the ordinary run of citizens became completely confused. Rather than commit a fatal social blunder, most of us decided to order beer with our beef stew.

As an example of how not to make a food product popular, this wine campaign was a masterpiece. One would think that, by this time, the industry would have made a right-about-face to more fertile fields of promotion.

But no, the snob appeal still goes on; and we now hear rumors from California that the Wine Institute, so far successfully promoting the Golden State's most famous product, is about to launch upon a campaign of instruction to consumers in the "art of appreciation" of domestic wines.

To our mind, no less fruitful method could be adopted. The wine industry should consider well the conditions obtaining in countries where wine is popular. Mass consumption of wine, in all wine-drinking countries, is consumption of what our French friends so appropriately name *vin du pays* or *vin ordinaire*. Wine is there considered as an ordinary table beverage, and the user needs no book of etiquette to guide him in his choice.

If the American wine makers want a similar mass market for their product, they would do well to keep from their promotion any suggestion that the consumption of wine is a mark of social distinction.

Self-Heating Food

ARE canners in Europe more alert than those in America? With the inauguration of air service between California and Hawaii there has arisen a demand for food that can be eaten hot en route without operating a stove in the plane to heat it. And this demand has been ingeniously met by the manufacture of self-heating canned food. But the food is supplied by a Holland firm.

There is no magic about the heating process. In fact, the method is known even to most laymen. The can of food sits in a second can which has one compartment containing unslaked lime and another filled with water. To heat the food, the chef merely turns the package upside down and punches holes through the lime and water compartments so that the water runs into the lime. Chemical action does the rest. There apparently is some porous filler material in the lime to retard and distribute the reaction, because it takes about half an hour for the food to heat.

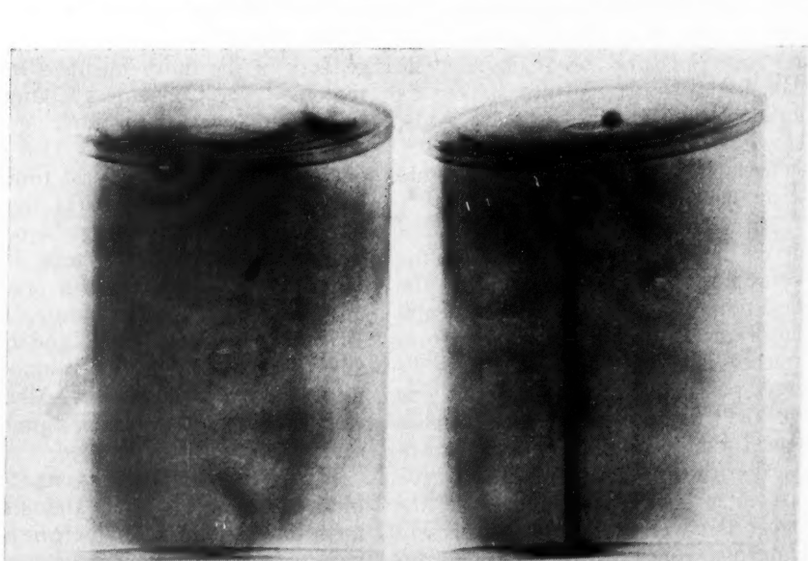
Pan American Airways pays upward of 50 cents a can for the self-heating food, even though its pilots don't like the greasy Dutch comestibles.

Salt Ice

A NEW refrigerant for maintaining uniform temperatures somewhat below the freezing point of water is appearing on the market in commercial form and is known as salt ice. It consists of frozen brine which has a melting point of —6 deg. F. This temperature is maintained constantly if the brine from which it is frozen contains 466 lb. of salt per ton of brine. Expressed in per cents, the ideal composition is 23.7 per cent NaCl which is the eutectic mixture. A eutectic mixture is one which will freeze without changing its composition.

Salt ice has a latent heat of fusion of 101.5 B.t.u. per lb. compared to the refrigerating effect of solid CO_2 at —6 deg. F., which is 265.7 B.t.u. per lb. Two and a half pounds of salt ice is, therefore, roughly equivalent to 1 lb. of solid CO_2 in refrigerating effect.

Compared with mechanical refrigeration, a test of salt ice for ice cream cabinets that were previously cooled



Acme Photo

X-RAY FOR CANS

Continuous X-Ray inspection now employed on inspection belts in metal working trades to reveal hidden flaws in castings has been tried on canned foods to detect foreign substances that might injure a consumer's teeth. A skeptic's comment: interesting, possible, but not practical.

mechanically, gave a difference in cost which was reported to be 30 cents per gal. of ice cream in favor of salt ice on a route where the sales averaged 400 gal. of ice cream per stop per year.

Of course, where salt ice is used, the equipment must be corrosion resistant. Where it is possible to reclaim the brine, it is possible to reduce the cost of flaked salt ice from $5 per ton to $4.50 and even $4 in exceptional cases.

Silver Lining

HOPES of the fishing industry to profit by the high prices of competing foods were knocked into a cocked hat by the enormous landings at Boston since the first of the year. Compared with corresponding months in 1934, January landings were up 44 per cent and February 50 per cent. Average February prices, at $0.023 per lb., were down nearly 50 per cent from 1934. And expected Lenten profits just weren't.

Nevertheless, many people in the industry believe that prevailing low prices have created a healthy condition, because this exceptionally large volume of fish (25 million pounds in February) has actually moved into consumption and frozen inventories have been very largely culled out.

Although this volume of low-priced food has helped to keep meat prices down, in a sense it has indirectly benefited the packing industry by making it possible for many more people to retain their meat-eating habits than would be possible under higher prices.

Plenty of Milk Ahead

FOR the benefit of those who like to do their own forecasting the annual government inventory of livestock supply of the United States affords food for thought. Total reduction in numbers of animals in 1934 was 13 per cent below 1933, a reduction that is twice as large as has occurred in any of the previous 45 years of recorded animal population. Also farm animals today are the lowest in number in the present century.

More important, however, is the nature of the change in cattle population, which declined 7,600,000 head last year, but is still 4,000,000 head more than the low point in the cow cycle in 1928. Now get this: more than 3,000,000 of these 4,000,000 animals are dairy stock. Beef animals have not increased materially since 1928. Dairy cows and heifers have increased from 22 million in 1928 to 25 million in 1935. Yearling dairy heifers and heifer calves have both remained constant in the last seven years.

Given adequate feed supplies the flow of milk will continue at its current seasonal rates for the next two years and dairy companies as usual will be blamed for low farm prices.

W. H. Kress

SINGING MILK

Demonstrating a proposed way to measure fat content in milk at the Veterinary Academy, Berlin. The theory on which it operates is that the electrical resistance of milk changes directly with the fat content and can be measured by a Wheatstone Bridge, or a circuit can be arranged so that the loud speaker will emit higher or lower pitched sounds if the fat content varies. All old stuff but it might make a swell gadget to impress lay visitors. Or it could be hooked up on a receiving line to emit a rude noise if the milk being dumped from patron's cans was not quite up to, say 3.5 per cent.

Social Legislation Studies

THOSE who are interested in studying the social security problem are urged to secure copies of "Facts About Old Age Security." This thorough study of the problem from the viewpoint of the business executive was prepared by the Committee on Social Legislation of the National Conference of Business Paper Editors. Another equally good report, "Facts About Unemployment Compensation" is also worthy of study. The labor committee of that organization has also prepared a splendid report on "The Thirty-Hour Week."

Any of these reports can be obtained for 10 cents each from Associated Business Papers, 330 West 42d Street, New York.

AAA Amendments

LEGISLATION for the extension of AAA authority into new fields may or may not pass. Congress will be put under pressure by the President in this regard only if this proves politically expedient during June and early July. Forecasting on that subject at this time (mid-May) is mere guessing, without any reliable basis for one's judgment. But the important thing is that affected industries should continue to keep members of Congress intimately acquainted with the important problems involved, so that the proper interests of the food industries shall never be lost to sight during Congressional debates.

A few well-informed spokesmen in either house can eliminate the most objectionable parts of any such legislation, because the facts are still hard to refute, even with New Deal legislators running the show.

Bakery Suffers Enormous Loss of Business

Bacteriological control could have avoided disaster

By L. V. BURTON
Editor of FOOD INDUSTRIES

MORE than a thousand persons were made ill after eating cream-puffs and eclairs from a large and well-known wholesale bakery in Westchester County, N. Y., in late April in this nation's largest outbreak of food poisoning. Newspaper headlines screamed the bad news from the front page. In 24 hours the big bakery had a tremendous loss of business. Ambulance-chasing lawyers importuned health authorities to give out definitely incriminating statements.

Next, the several health authorities issued orders that, until further notice, no custard-filled pastries may be made or sold in Westchester. That business is "out," one suspects, forever. Meanwhile claims for medical services, for sufferings and for damages are piling up. Each claim case is being "investigated" and that means more expense to the company—to say nothing of possible payments.

A major disaster of this character carries certain implications in Westchester that would not be met in many other communities in the United States. That county, with its 520,000 population, is the wealthiest in the country and the proportion of those individuals who wield great power and influence is unusually large. Attempts to laugh off or minimize the affair with such powerful persons usually fall flat and arouse a dangerous antagonism.

Why did all this trouble occur? Answer: Some bacteria developed in the filling that should not have been there. The Yonkers Health Department Laboratories found 30,000,000 bacteria per gram in the fillings of the eclairs, a figure which is 100 times as great as the maximum number of bacteria (300,000 per c.c.) that is permitted in milk sold there for any purpose. Furthermore, both the Yonkers Laboratory and the New York State Health Laboratory found that large numbers of *Staphylococcus pyogenes aureus,* a *Streptococcus,* and a *coli*-like organism were present.

None of these bacteria would ordinarily be suspected of being the causal agent, but since 1931 it is becoming recognized that *Staphylococcus pyogenes aureus* is fairly regularly associated with food poisoning outbreaks and under certain conditions seems to produce a poisonous substance. To many this will be an incredible statement, for this particular *Staphylococcus* is a common inhabitant of the normal skin of everybody, being the usual cause of boils and carbuncles. Skeptics are referred to Tanner: "Food Borne Infections and Intoxications," 1933, and to Jordan: *Journal of American Medical Association,* **97,** 1704, 1931.

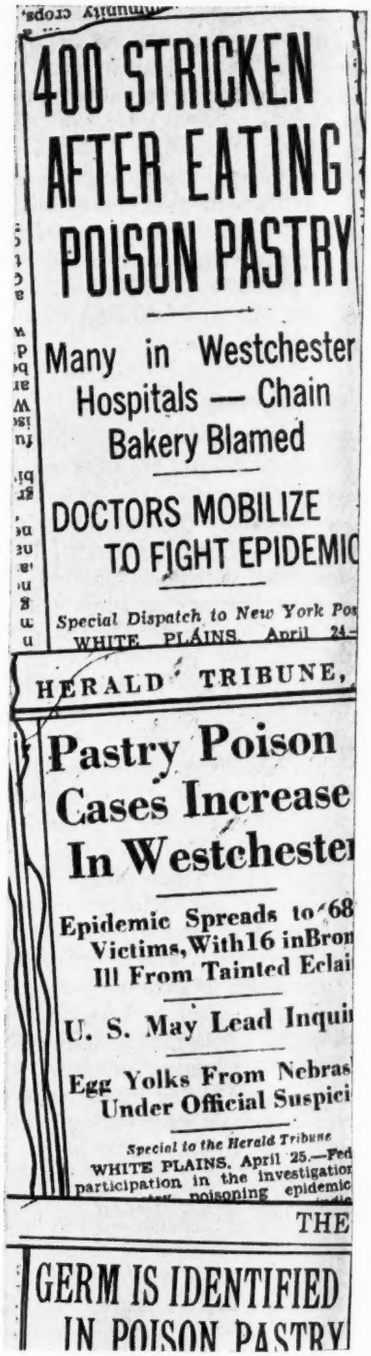
Early in the investigation suspicion fell on the frozen egg yolks used in making the filling, because laboratory animals died when injected with egg yolk from the same lot. But later tests failed to reveal the presence of the same bacteria which were found in the offending pastries.

OUR own conclusions reached immediately after the outbreak are that:

1. Bakers of custard-filled pastries and certain types of pies should institute regular routine bacteriological examination of supplies and ingredients. These routine tests should be supplemented by regular tests on output as a check on the efficacy of sanitary control. To be sure it will cost money. So do law suits for damages, even when the defendant wins.

2. Bakers have got to discover how to produce commercially sterile custard fillings or else abandon the production of cream-puffs and eclairs. This is said with a full understanding that prolonged cooking will coagulate egg yolk and ruin the custard filling.

3. All food manufacturers must learn and apply the principle that there is an economic value as well as an esthetic value to extreme care in


400 STRICKEN AFTER EATING POISON PASTRY

Many in Westchester Hospitals — Chain Bakery Blamed

DOCTORS MOBILIZE TO FIGHT EPIDEMIC

Special Dispatch to New York Pos
WHITE PLAINS, April 24.—

HERALD TRIBUNE,

Pastry Poison Cases Increase In Westchester

Epidemic Spreads to 68 Victims, With 16 in Bron Ill From Tainted Eclai

U. S. May Lead Inqui

Egg Yolks From Nebras Under Official Suspici

Special to the Herald Tribune
WHITE PLAINS, April 25.—Fed participation in the investigation

THE

GERM IS IDENTIFIED IN POISON PASTRY

FOOD POISON FELLS 479 IN WESTCHESTER

Epidemic Ascribed to Tainted Pastry—Source of Germ Mystifies Officials.

VICTIMS IN SEVERE PAIN

But No Cases Are Regarded as Serious—Headache Wave Is Expected to Follow.

Special to THE NEW YORK TIMES.
WHITE PLAINS, N. Y., April 24. —An epidemic of food poisoning developed throughout Westchester

428 Poisoned By Pastry in Westchester; 15 in Hospitals

Tainted Cream Puffs and Eclairs Start Epidemic Felling Victims With Symptoms of Ptomaine

5 Inquiries Begun As List of Ill Grows

Bakery, Held Blameless, Aids Health Officials in Recalling the Produ... Workers

U. S. INQUIRY LIKELY IN PASTRY POISONING

Eggs Laid in Missouri, Packed in Nebraska and Shipped From Chicago Blamed.

VICTIMS NOW TOTAL 683

No More Danger Seen—White Plains Bakery Is Praised by Dr. Nicoll.

2,000 Believed Victims Of Poisoned Pastries

Many in Westchester Didn't Report Illness, Say Officials

Special to the Herald Tribune
WHITE PLAINS, April 26.— The ...filling used in pastry which is

30, 1935

Custard Pastry Ban To Be Asked In Westchester

Nicoll, Health Head, to Seek Regulation for Summer as Poison Total Goes to 772

Germs Shown in Test

Guinea Pig Dies After Injection of Cream-Puff Filling

NEW GERM IS FOUND IN CAKE POISONING

...reptococcus Is Discovered in Samples of Filling in Westchester.

sanitary control. The dairy industry and the brewing industry understand it very well. Clean appearance alone is not enough. Materials and equipment must also be bacteriologically clean. It takes much more than white walls and white coats and aprons to produce conditions of bacteriological cleanliness.

What appears to be the final chapter in the scientific investigation of the food poisoning epidemic is a decision that was rendered on May 17 by Westchester County (N. Y.) Health Commissioner, Matthias Nicoll, Jr., M.D. His statement is quoted in full.

"At a conference held at the branch laboratory of the State Department of Health in New York City on May 16, at which were present the director and assistant director of the State Laboratory, Dr. A. B. Wadsworth and Dr. Ruth Gilbert, Dr. G. H. Ramsey, director of the Division of Communicable Diseases of the State Department of Health, Mr. W. R. M. Wharton, Mr. D. M. Walsh, and Mr. W. R. North, representing the Federal Food and Drug Administration, and Dr. Matthias Nicoll, Jr., representing the Westchester County Department of Health, it was agreed unanimously that the recent epidemic of food poisoning occurring in Westchester County was due to 'fill' introduced into the custard fill cream puffs, eclairs, and other similar products, and that the laboratory studies conducted by the Federal Government, by the State Department of Health, and by Dr. Ward Cook of the Yonkers Laboratory point strongly to the conclusion that the 'fill' became bacterially contaminated in some manner undetermined, and further, that there is no evidence that the frozen eggs, as received by the bakery, are the source of this contamination.

"It was agreed by the conference that in the handling of perishable and very readily contaminated material of this kind it is essential that stringent sanitary precautions should be taken in its manufacture, and that the methods of manufacture and distribution should be controlled practically by the employment of a sanitary expert, who must have full responsibility for and control of the personnel engaged in the handling of these products.

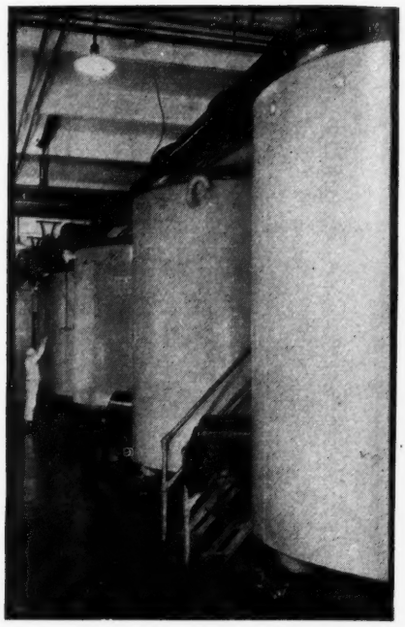
"It was further agreed that in view of the nature of these products they should be marketed promptly after manufacture, kept at a low temperature, and that the public should be warned to avoid storage and to consume them promptly. It is also believed that, unless and until these precautions can be assured, prohibition of the manufacture and sale of custard filled pastry is desirable. The public should understand that this warning applies only to pastry containing custard filling, and not to cake, bread, or other thoroughly cooked bakery products."

FOOTNOTE: Not everyone who ate these pastries was made ill. In several families one or more persons ate, but were not affected. Symptoms exhibited by those who were made ill are quite similar to symptoms in several other forms of food poisoning: vomiting, diarrhea, usually very violent; headaches; abdominal pain; extreme weakness and sometimes complete prostration. Onset of symptoms occurred from two to eight hours after eating. There were no deaths. Recovery took place in most cases within 24 to 36 hours. After recovery, several cases have experienced respiratory and sinus infections.

PAINT
As an Aid to
Better Products

By G. L. HEHL

General Superintendent,
The Sherwin-Williams Co., Newark, N. J.



In the dairy sanitation is the determining factor in the use of paint on equipment as well as on the structure.

FOR YEARS we have been stressing the value of painting from the standpoint of sanitation and an attractive appearance—more particularly since the Food and Drug Administration made the public "purity" conscious, resulting in the opening of food plant doors as the most effective way to publicly advertise a wholesome, clean atmosphere.

Of greatest importance from the executive's standpoint, however, is how paint can improve the quality of his products—maintain a higher quality, and cut down waste and spoilage. Paint properly selected can and does aid in the control of dirt, dust, mold, bacteria, moisture, rust, and other foreign substances. It makes possible better seeing conditions, important where the stage of a process or the quality of a product is determined by observation of the color, appearance or texture.

White paint on larger areas not only affords the desirable clean appearance, it affords the maximum amount of light reflection and a more even distribution of light over the entire floor area, especially noticeable away from windows. Less artificial light is required to afford more abundant illumination, with a resulting saving in lighting costs.

Color applied to dados, machines and other equipment not only increases the opportunity for creating an attractive appearance, if chosen with respect to psychological values it will improve employee spirit and productive efficiency. Contrasting colors applied to operating levers make faster handling and greater safety possible. Red applied to danger zones improves safety. Cool colors, such as blue or green on lower portions or trim of excessively warm rooms; or warm colors, such as red, orange, or buff, on refrigerator dados or for cool rooms will promote a feeling of comfort where employees are obliged to work under these extremes. Pipe line enamel colors used as markings on white or light-tinted pipe lines will facilitate identification without detracting from the white appearance sought in the plant.

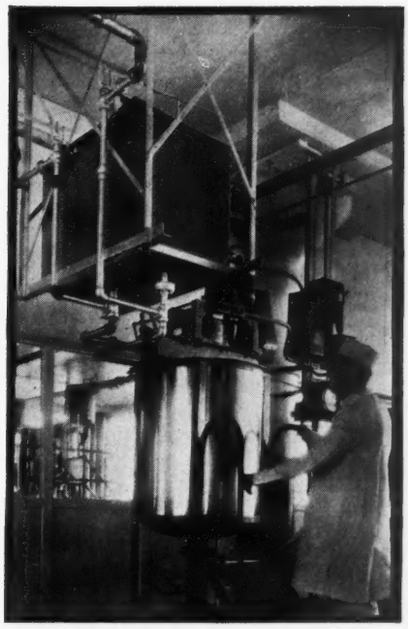
Because of dust, fume, gas, and moisture conditions, as well as high humidity and temperature extremes, painting in food plants is in some cases a somewhat specialized problem. Dust explosions have always been a hazard in flour mills and in macaroni, baking, cereal and other plants faced with dust problems. Dust of this character is also a breeding place for germs and insects, and takes up considerable dirt if allowed to settle for a period of time. Good grades of oil paints, either gloss or semi-gloss, or special enamels are generally recommended. Such finishes are dirt, dust and moisture resistant, and stand frequent washing without destruction of the paint film. It is important to have all cracks and crevices filled, and advantageous to round all corners before the final painting operation. This will lessen the need for repeated fumigation and sterilization. Porous concrete walls will not only collect dirt, dust and food particles, but will absorb moisture, resulting in the formation of mold and the propagation of other microscopic organisms. Obscure corners and cracks are frequently havens for insect pests despite sanitary measures. A little filler and paint will overcome this condition.

THE exact paint to be applied should be governed by existing conditions. The presence of fumes or gas, if strong, will require paints specified as fume-resistant. Conditions of excessive heat or temperature extremes require paints employing vehicles and pigments that do not break down and discolor when exposed to heat, and vehicles that possess unusual flexibility. The formulation of these paints varies with different manufacturers, but important to executives and maintenance men is the knowledge that special paints exist that are designed to give lasting service at a substantial saving.

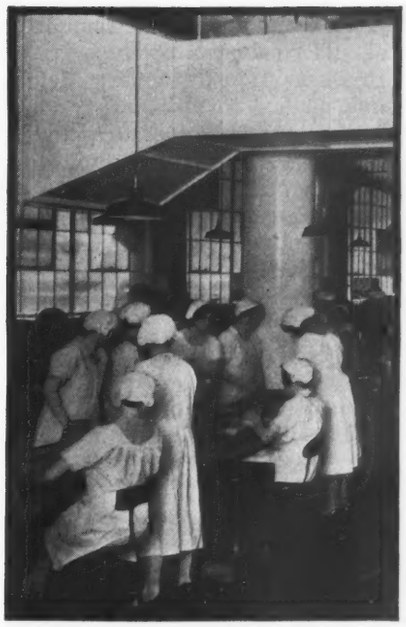
Concrete paints for interior or exterior use are oil-type paints differing from standard outside paint in that they are given a vehicle which prevents over-absorption by porous concrete, and cover evenly on the rough texture. New concrete surfaces are best treated by washing down with a solution of 1½ to 2 lb. of zinc sulphate crystals to a gallon of water. This will minimize the dangers from free alkali. If the concrete is rough or porous it will be advantageous to apply a coat of primer and sealer about 48 hours after the wash down under normal drying conditions.

Paint should never be applied over loose paint, or on greasy or damp walls. Cracks and crevices should be

White paint in the shipping room gives good lighting that speeds operations and also promotes cleanliness.



In the mayonnaise plant, readily cleanable surfaces and good lighting insure contamination-free conditions.



Attractive appearance and better lighting are achieved through the use of white paint in this packing plant.

filled with a special paint filler. Regular and fume-resisting paints are obtainable in gloss, semi-gloss and flat, as are the standard paints, and may be applied by brush or spray gun. If the spray method is used it is advisable to avoid the use of high lead-content paints where there is danger of contaminating food in process with lead.

Concrete floors require the application of floor enamels which have excellent sealing and wearing qualities. Unpainted concrete floors absorb considerable moisture, take up odors, hold dust, form breeding places for germs and insects, and are difficult to wash thoroughly clean. Though often neglected they are tremendously important in the control of those conditions which make a pure, wholesome and uniformly fine product possible. Neglect of concrete floors also results in their gradual deterioration and disintigration due to moisture conditions, the presence of various oils and chemicals. Good grade floor enamels have a high gloss and possess remarkable wearing qualities. If lighter colors are used there will also be less absorption of light by floor areas, and the general appearance of the plant will be distinctly enhanced.

Where color is of no concern in a concrete coating, as in storage rooms or other isolated areas, finishes known as concrete hardeners are generally satisfactory. These hardeners are usually colorless and possess a high gloss like that of clear varnish. They are a water solution of rock-forming substances which remain dissolved in water until they come in contact with the alkaline substances in concrete. The resulting chemical reaction forms an insoluble rock substance that is exceedingly hard and resistant to moisture.

FINISHED machines and equipment in soft pastel shades to lend contrast to the white is a more recent practice and reduces the intensity of white where eyes are focussed for long periods and has resulted in the development of superior enamels in color. They are obtainable in standard and special heat and fume-resisting types. Due to their hard, smooth film they are easily kept clean and are resistant to the effects of oils, water, abrasion and other common conditions. Enamels specified as machine types are applicable to wood, metal and other surfaces as well as machines and pipe lines, and better formulations cover solid in one coat. Where fast drying is essential, enamels of the quick-drying type will allow handling of equipment within an hour after application, thus avoiding serious interruption of operations.

Refrigerator finishes are obtainable in flat eggshell, or gloss types, and in white or colors. The most satisfactory kind to use is the odorless, quick-drying finish. Good grades act equally well on dry or damp walls, cold or warm rooms. They can be applied to refrigerator interiors without affecting meat hanging there while painting is going on, and are sometimes preferred to other finishes for other parts of food plants.

The adoption of air-conditioning is also gaining great favor, especially where control of temperature and degree of humidity are essential in certain food processes, and in further controlling dust and fume conditions. Where good grades of paints are used as recommended, no painting problem results. In general the life of the paint is distinctly increased by the adoption of air-conditioning.

Structural steel and iron surfaces, interior as well as exterior, are best treated by the application of a lead chromate base paint after removing all rust, scale, grease and moisture from the surfaces. The lead chromate type metal primer, given a vehicle of a fine balance of refined linseed oil resins and tung oil, will inhibit corrosion and stand months of abuse and wear, even though the application of a suitable final coating may be delayed. Final coatings of metallic, graphite-carbon paint, or prepared building paint (for special colors or white) will be found very satisfactory. Where heat is extreme, heat and fume-resisting metallic paints and smokestacks are to be preferred.

Enamels known as engine enamels

will withstand appreciable amounts of heat and combine a choice of colors with a smooth lustral finish. Metallic paints applied to radiators result in a loss of heat radiation amounting to nearly 17 per cent. White and light tints show practically no loss. This is an important consideration in painting pumps, air compressors and other units as well as radiators, where it is desirable to dissipate heat as rapidly as possible. Just as white is the best reflector of light, it is the best reflector of heat from the sun's rays striking storage tanks, motor and railway tanks. Applied to a radiator it will also increase the efficiency of the radiator. In selecting paints for these various conditions, consideration given to the heat reflection and radiation factors of different paints will not only increase operating efficiency but permit closer control of the food processing operations and preservation of the finished food product.

Where it is desirable to paint galvanized metal surfaces such as exhaust ducts, bins, roofs or siding of buildings, it is important that the surface should be permitted to become etched through weathering for at least six months or else be treated to avoid wholesale peeling of the paint applied. New metal or galvanized metal in interiors that are to be painted should be washed down with a solution of 8 oz. of copper sulphate to the gallon of water, and preferably given a priming coat with a special zinc pigment primer. Another method is to wash the metal down with a solution consisting of 1 gal. of 56 per cent commercial acetic acid to 2 gal. of water. After the surface has dried it may be coated with a suitable primer. Final coats of a

(Turn to page 312)

Operating conditions encountered in food manufacturing plants which must be considered when specifying paint, and whose harmful effects upon the product, plant and equipment can be minimized by the proper selection of

PAINT

	Manufacturing Operations: Handling Bulk Solids	Grinding Dry Solids	Sifting, Separating, Cleaning	Mixing & Blending (Dry)	Filling Dry Solids	DUST: Cause of Explosion, Dirt & Contamination, Breeds, Insects, Germs & Bacteria: Handling Bulk Liquids	Centrifuging	Filtration & Extraction	Homogenization	Mixing & Blending (Wet)	Grinding Wet Solids	Filling Wet Solids	Filling Liquids	Plant & Equipment Cleaning	Container Washing	MOISTURE: Causes Rust and Corrosion, Favors growth of Mold, Germs, Bacteria produces Odors: Baking	Blanching	Cooking, Boiling & Melting	Drying, Dehydration	Roasting	Smoking & Curing	Sterilizing, Pasteurizing	FUMES & GASES: Carry Odors, Germs, Dirt, Bacteria, Moisture, Mold Spores, Etc.: Mixing & Blending (Wet)	Curing, Proofing	Drying	HIGH HUMIDITY (Thru Air Conditioning) Intensifies Conditions caused by Moisture, Mold, Bacteria, Rust, Corrosion Odors, Germs, Etc.: Storing Raw Materials	Storing Finished Products	Chilling & Cooling	Freezing	REFRIGERATION: Involves Problems of Insulation, causes Moisture Condensation	Total Number of Plants Census of 1933
BAKERY PRODUCTS	+		+	+						+						+		+					+	+		+			14,814
Bread, Rolls & Coffee Cake	+		+	+						+						+		+					+	+		+			Included in above
Crackers, Biscuits, Etc.	+		+	+						+						+	+						+	+		+			"
Pretzels & Other Products	+		+	+	+					+						+	+						+	+		+			"
BEVERAGES						+		+		+	+		+	+	+						+			+	+		+			3,689
Carbonated & Other Beverages						+		+		+	+		+	+	+						+						+			2,903
Malt Liquors						+				+			+	+	+						+			+	+			+		524
Vinous Liquors						+		+		+			+	+	+									+				+		212
CANNING & PRESERVING	+		+		+		+		+	+	+	+	+	+	+			+	+	+		+	+				+	+	+	÷	2,331
Fruits & Vegetables	+		+				+			+	+	+	+	+	+			+	+				+				+	+	+	+	2,069
Fish & Sea Food							+			+		+	+	+	+				+		+	+					+	+	+	+	262
Dried Fruits & Vegetables; Sauces	+		+		+		+		+	+	+	+	+	+	+			+	+	+			+				+	+			Included with fruits & veg.
CONFECTIONERY	+	+	+	+	+		+		+		+		+	+	+			+	+	+	+			+			+	+			1,302
Chewing Gum									+		+		+		+				+					+			+	+			31
Chocolate & Cocoa	+	+	+	+	+		+		+		+			+					+		+			+			+	+			54
Confectionery & Salted Nuts	+		+	+			+				+				+	+		+	+	+				+			+	+			1,217
GRAIN PRODUCTS	+	+	+	+	+		+		+		+	+		+		+		+	+	+				+				+			2,849
Cereal Preparations	+	+	+	+	+		+				+	+						+	+	+				+				+			100
Prepared Feeds	+	+	+	+	+																										709
Flour & Other Grain Products	+	+	+	+	+																			+							2,012
Corn Syrup, Oil, Starch	+	+	+	+	+		+		+		+	+		+		+			+	+				+					+			28
MEAT PRODUCTS							+		+		+	+	+	+	+	+		+		+	+	+	+					+	+	+	+	2,223
Meat Packing												+	+		+	+		+		+	+	+	+					+	+	+	+	1,073
Sausage & Related Products											+	+	+		+	+								+				+	+			713
Poultry Packing															+													+	+	+	+	437
Lard							+		+					+	+	+				+				+					+	+			Included in meat packing
MILK PRODUCTS	+				+		+	+	+	+	+	+	+	+	+	+				+	+							+	+	+		7,869
Butter							+	+			+		+		+									+				+	+			3,161
Cheese							+	+			+		+		+	+								+		+		+	+			2,155
Ice Cream							+			+	+	+	+		+	+				+				+				+	+	+		2,118
Cond., Evap., & Powdered Milk	+				+		+		+		+				+	+					+			+				+	+			435
SUGAR	+		+	+	+		+	+	+		+	+		+	+	+				+	+								+			170
Beet Sugar, Syrup, Etc.	+		+	+	+		+	+	+		+	+		+	+	+				+	+								+			84
Cane Sugar, Syrup, Etc.	+		+	+	+		+	+	+		+	+		+	+	+				+	+								+			86
OTHER FOOD PRODUCTS	+	+	+	+	+		+		+	+	+	+	+	+	+	+					+	+							+	+			1802 1865
Flavors, Extracts, Colors				+	+		+		+	+	+		+	+	+						+								+	+			383
Macaroni & Other Pastes	+		+						+		+			+							+				+	+	+						296
Oleomargarine & Butter Subst.											+		+																+	+			16
Vegetable Oils & Lard Subst.							+				+		+	+		+													+	+			49
Vinegar & Cider							+		+		+	+		+	+	+																		121
																													TOTAL PLANTS				36,864

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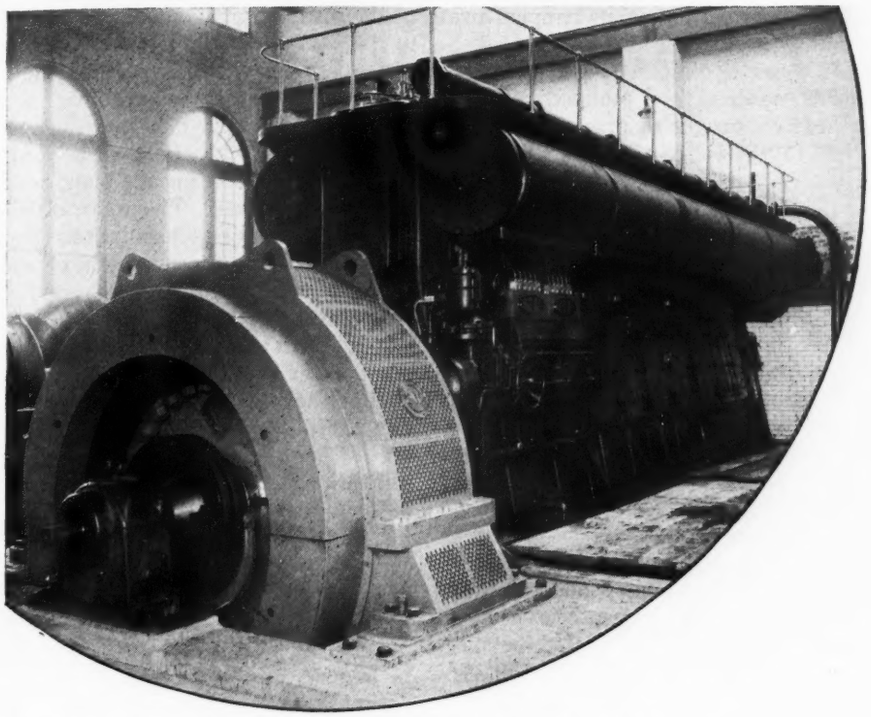
Study of this chart will quickly indicate to the food plant executive the many places in his plant where attention can profitably be given to the correct use of paint.



An excellent example of diesel waste-heat utilization, this 3,000-hp. engine at the Morgan St. plant of Pau Corp., Chicago, saves $7,600 a year in costs.

DIESEL

Saves $7,600 Each Year for Packing Plant

Other plants make comparable savings by using waste heat from engine for processing and heating

By E. J. TANGERMAN
Associate Editor, Power

IN MANY food plants, the amount of process heat needed is small compared to power requirements. Such plants can make good use of the diesel engine, recovering the necessary heat from the jacket-water and exhaust gases and attaining exceptionally high efficiency in energy conversion.

Diesels operate at thermal efficiencies of 30 to 38 per cent—that is, between 30 and 38 heat units of every 100 in the fuel are delivered as power. This is much better than any other prime mover can do. And when heat is recovered from the jacket water and exhaust, the efficiency steps up to 70 per cent or more. Compare this with the approximately 10 per cent efficiency of a non-condensing steam boiler and engine plant and the 20 to 27 per cent efficiency of the most efficient condensing turbine installations.

Of the 62 to 70 per cent losses on a diesel operated without waste-heat recovery, only 5 or 6 per cent is irrevocably dissipated in radiation, friction, and so on. The other losses usually are about evenly divided between jacket-water and exhaust-gas heat. All jacket-water heat can be recovered if plenty of water is available at low cost, and about half of the exhaust-gas heat is recoverable in any event.

An example of what can be done in the way of diesel efficiency is seen in a small south-German plant, where 84.8 per cent is attained. This plant passes the jacket water and exhaust gases of its 1,200-hp. diesel through heat-recovery equipment, reclaiming 40.8 per cent of the heat generated by the fuel from the jacket-water and 12.9 per cent from the exhaust gases. So, with an engine operating at 31.1 per cent thermal efficiency, there is a loss of only 15.2 per cent. Another German plant with a small 73-hp. diesel recovers 50 per cent of the normal waste to add 34 per cent to the engine efficiency and give an economy figure of 84 per cent. American diesel installations, however, do not approach these efficiencies, because fuel is cheap here in proportion to the first cost of the heat-saving equipment.

AN EXCELLENT example of diesel waste-heat utilization in this country is the installation at the Morgan St. plant of Pau Corp., Chicago, which supplies heat and power to Union Stock Yards. This plant formerly generated, with steam, about 30 per cent of the power required and purchased the remaining 70 per cent, the utility carrying peak loads at high unit cost. A little study showed that a 3,000-hp. diesel, which would fit into the small space available, would do much to correct the heat balance of the steam plant and at the same time would take care of peak loads. Of the 30.9 per cent of the heat normally lost in jacket-water and the 32.3 in exhaust gases, a total of 38 per cent could be recovered as heat in boiler feedwater.

To accomplish this, the jacket water, with a temperature of 140 deg. F., is heated to 180 deg. F. in a waste-heat boiler (one of the old plant boilers) through which the engine exhaust is passed. The 180-deg. water then passes to the feedwater heater or through an automatic bypass into the flushing system reservoir. No water is wasted, and there is recovered about 9,000,000 B.t.u. of heat per hour—the equivalent of 1,065 lb. of coal—to give a total saving of $7,600 a year.

Breweries, to take another example from the food field, have effected economy by using diesels and recover-

ing the waste heat from them. India Wharf Brewing Co., Brooklyn, N. Y., a 100,000-bbl. plant, recently installed two 300-hp., 6-cycle, $10\frac{3}{4}$x$15\frac{3}{4}$-in. diesels to replace its old steam engines and three boilers. This plant needed high-pressure steam, which the old equipment couldn't produce; it had little coordination of process and power loads; and it had a low load factor which ruled out purchased power. The actual power load runs around 200 kw., very low for a plant of this capacity, so one diesel is operated at a time and the other is held as standby. The diesels drive a.c. generators, or alternators, a small motor-generator set converting to d.c. for certain plant needs.

This installation operates with an all-over heat economy of about 75 per cent. To get this high figure, city water is circulated through the engine jackets and recirculation system, then to a waste-heat boiler and on to the brew vats. Some jacket-water, however, is sent through the engine standing idle to keep it warm, giving quick starting, reducing temperature stresses and minimizing wear.

In this plant, the cost of the alternators was kept down by using a 100-hp. synchronous motor in the refrigeration room to drive a 10x10-in. compressor, this motor giving a leading power factor to balance the induction motors in the plant. The cost of generating power is less than 1 cent a kilowatt-hour, and the installation will pay for itself over other methods of power generation in less than five years.

THE methods by which the waste-heat is recovered from diesels are not complicated. Using the heated jacket-water is, in fact, absurdly simple. If a continuous supply of suitable water is available at reasonable rates, the jacket-water can be used directly in the process, its temperature running around 150 deg. F. If fresh soft water is difficult to get, then the jacket-water can be pumped through a heat exchanger to give most of its heat to raw water or air. The exchanger may be either a simple home-made double coil getting part of the heat, or a more elaborate purchased unit operating at higher efficiency. Modern engines add about 26 B.t.u. per brake horsepower to the cooling water for every minute of full-load operation. A 1,000-hp. engine, for example, delivers 30 per cent of the heat content of the fuel to the jacket-water. This amounts to 2,268,000 B.t.u. per hour, which is equivalent to 285 lb. of coal.

To abstract heat from the exhaust, some sort of heater is necessary. This may range from a cast-iron heat exchanger to an elaboarte waste-heat boiler which will recover the last available heat unit. On a 10-hp. engine, with an ordinary commercial cast-iron heater, the exhaust gases alone will heat 45 gal. of water per hour to 150 deg. F., or 30 gal. to 200 deg. F.

If it be desired to bring the jacket-water to a very high temperature or convert it to steam up to 100-lb. pressure, heat from the exhaust will do the trick. For steam, a boiler must be used on the exhaust pipe; with a pressure greater than 10 lb., the boiler should be a steel-shell unit. Such boilers usually are set right into the exhaust pipe and can be run dry as engine exhaust mufflers when no steam is needed. At full load, the boiler usually will produce one or one and one-half pounds of steam per brake horsepower for each hour the engine operates. Elaborate waste-heat boilers rarely are economical on engines smaller than 500 hp., or on those which run only at peak-load periods or partial loads. The expense of the installation is out of proportion to the amount of heat available.

To heat air with the diesel exhaust, the exhaust line and muffler are jacketed and the air blown through in a counterflow direction. Such air may be used in heating the plant or in drying operations. The more elaborate plant heating installations embody hot-water heaters which use jacket-water from the diesel raised in temperature by contact with the exhaust. With a hot-water system, each horsepower of the engine provides enough heat each hour to raise the temperature of 180 cu.ft. of space from 4 deg. F. to 60 or 65 deg. Such utilization, of course, shows a profit only in the winter, but it may save installing another type of heating equipment.

OTHER uses for engine waste are in producing distilled water or boiler feedwater, heating tank cars for easy unloading, and so on. In Europe waste heat may even drive gas turbines.

In considering the use of waste heat from diesels, it must be kept in mind that more heat normally can be recovered from 4-cycle than from 2-cycle engines. In 4-cycle units the temperatures ordinarily run from 600 to 650 deg. F.; in 2-cycle, 500 deg. The exhaust temperature should not be reduced below 300 deg. when heat is abstracted, because the gases may condense and their sulphur content corrode the heating surface.

In computing the B.t.u. which can be recovered from exhaust gases, the following formulas may be used:

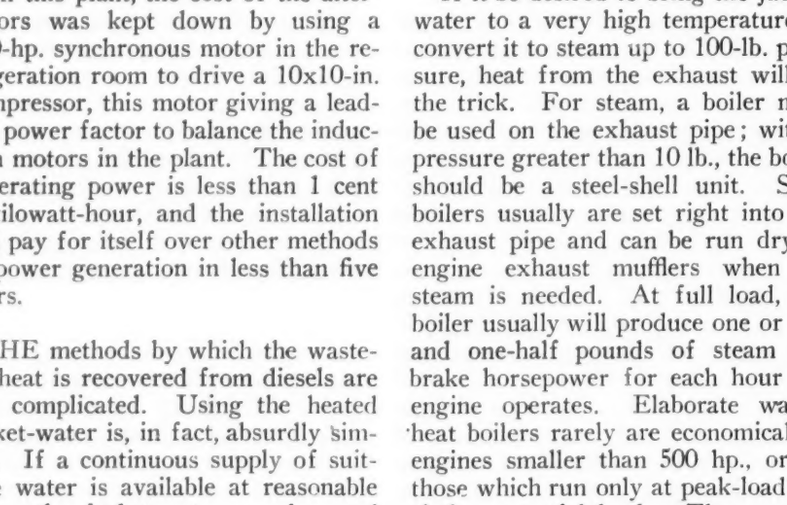
4-cycle engines: Brake horsepower x $3T$
2-cycle engines: Brake horsepower x $5T$

T is the permissible drop in exhaust gas temperature, expressed in degrees Fahrenheit.

More heat is recoverable as hot water than as steam, because of the lower temperatures.

Another point must be considered in planning heat recovery installations where it is desirable to use all the heat in the jacket-water. Namely, that cold water will have to be run into the engine jackets and the engine may never reach its most economical operating temperature.

This, then, is the story of the diesel and waste-heat recovery. The picture varies with the particular conditions, and anyone contemplating a new power installation should place the problem in the hands of a capable, unbiased consulting engineer.



Heat distribution of diesels of various sizes under various loads.

National Brands Take Lead

Recent surveys show consumer preference is turning away from the private brand

By HARRISON YOUNG BINGHAM
Evanston, Illinois

CONSUMER food buying preferences are swinging back from private to national brands. For our purpose the word "private" covers those brands usually found in voluntary and cooperative chain stores. They may be either sectional or local in the amount of territory that they cover. They are practically non-advertised, except in conjunction with the store advertisements themselves. National brands are the direct opposite. Their names in some cases are almost synonymous with the food items they identify.

There are several indications of the trend to national brands. First are the figures from some actual surveys. A check was recently made by the Cleveland *Press* of the buying habits of the housewives in that city. In every case but one (coffee), national brands took the lead in the preferences of the housewives for food items.

In the latest consumer analysis of the Greater Milwaukee Market compiled by the Milwaukee *Journal* for 1934, national brands again took the lead. Of the total food items purchased by the housewives in that city, 53.1 per cent were national, while the remaining 46.9 per cent were split between private and chain store brands.

A survey conducted among 1,500 consumers in 23 states, made for *Sales Management* by Ross Federal Service, Inc., shows that 84.8 per cent of the housewives buying food products preferred nationally-advertised brands to unknown brands. In an earlier survey made by Ross Federal Service, Inc., for the same publication, 50 grocers were interviewed in each of ten different cities to determine the leading grocery store brands. For the total ten cities, the items that were selling the fastest were all nationally famous with the exception again, of coffee. Competition was keen, for 340 different brands were sufficiently strong to be mentioned either as leading sellers or as those increasing most rapidly. In other words, there was an average of 34 different brands in each of the ten classes of products surveyed. Quoting from the survey: "Local items show up in every city, but in most cases were outnumbered by the nationally-advertised items. Lipton and tea, for example; Kellogg and cornflakes, Campbell and soup were almost synonymous in the minds of a majority of grocers."

LET us turn now from these surveys to another factor which is playing an important part in the trend to the national brands: The growing cooperation between manufacturer and dealer. For the past few years, when the private items were the strongest on the market, manufacturers of national brands evidently felt that all they had to do was to advertise a good product. But they failed to supply the dealers with any direct incentive for selling the product. Dealers had plenty of incentive, however, for selling the private brands and still have in many cases. The majority of them were working either cooperatively or voluntarily for the companies that produced the private lines, and naturally they pushed them hard. As prices of these lines were low, there soon came a breakdown in price of many nationally-advertised products, a factor which created price-conscious buying in which quality was of secondary consideration. Dealers gradually accented their interests in private brands, as they were conscious of their ability to distribute such merchandise with more or less success. Substitutions naturally developed.

Thanks, however, to the cut-throat competition of some of the private items on the market, these same private items are beginning to lose some of their sting as far as the quality items are concerned. In the beginning the fight was between the national and the private brands of foods with the dealers and the housewives all rushing to buy the cheaper lines. These cheaper lines grew so popular that every chain store of every kind all over the country began to put out its own products. For a while they subdued the national brands. But they were not content with that. They then had to try to subdue each other. That's where the real fight is now.

National brands have been benefitting by this war. The manufacturers woke up long ago. First they appealed directly to the housewives. They educated them back to quality. They ran many contests to create new interest and hold new buyers. They made their products more attractive, indicated new uses. They lowered prices without cheapening quality. They sought more direct contact with the dealers.

Of course it wasn't all as simple as that. Nor is the picture complete by any means. But there must be some truth in it, for dealers, both voluntary chains and independents, have been dropping private lines and taking on national brands.

ANOTHER indication of growing cooperation on the part of dealers came in October, 1933, when Sheffield Farm Stores announced a policy of direct cooperation with manufacturers of national brands. They sent letters to 1,100 manufacturers explaining their plan. They stated that they believed in giving customers what they wanted and did not make a practice of offering substitutions. They further stated that they would support manufacturers' products in weekly circulars, in signs, and in window and counter displays. These stores now carry approximately 1,200 grocery items. Exactly ten of them are private brands—eight canned food items, coffee and tea.

General opinion also is now in favor of the national brands. Leading men in the food field, editors of food publications, heads of national grocery associations all state, in one way or another, that the private brands are losing their hold.

Public Rents Frozen-Food LOCKERS

By HENRY W. YOUNG
Portland, Ore.

Aisle between lockers, showing attendant with some of the paper containers in which fruit and vegetables are stored.

AN UNUSUAL type of refrigeration service is being rendered in Yakima, Wash., by the Yakima Transfer & Storage Co., of which J. J. Crawford is president and W. E. Norton, secretary-treasurer. It consists of a locker room, to which patrons have access, and which in principle is not unlike the safety deposit department of a bank. Each patron has his own locker, with key, and may go in at any time up to 7 p.m. on week days and 10 p.m. on Saturdays.

This locker room, which is entered through a pre-cooling room, is maintained at a temperature range of from 5 to 10 deg. above zero. Therefore, the fruits, vegetables, meats, etc., that the patron puts into his locker are immediately frozen solid, and so remain until he comes for a supply, either for de-frosting and immediate use or to put into his home refrigerator.

Small fruits of all kinds, vegetables, such as peas, string beans, asparagus and the like, are put into ordinary ice-cream cartons, making convenient and sanitary unit packages. When it comes to meats, the patron may bring in a whole or parts of a beef or hog, for instance. It is placed in the pre-cooling room (temperature 40 deg.) and kept long enough for the animal heat to be dissipated. Then an attendant, on duty at all times, cuts it up into portions appropriate to the family of the patron, or as specified by the patron. These cuts are then all carefully wrapped in separate packages, contents of each marked, and placed in the patron's locker.

Similarly, all kinds of fowls, game and fish are stored. The attendant's charge for cutting and wrapping is a cent and a quarter a pound, which, incidentally, about maintains him as far as the company is concerned.

THE advantages to the public are: Procuring fruits and vegetables in season, when quality is best and prices lowest and enjoying them, in practically their fresh state, out of season; procuring meats of best quality at wholesale and "eating at retail"; keeping game and fish as long as reasonably desired; eliminating the cost and annoyance of home canning.

The charge for this service made by the Yakima company is $9 a year for a locker of 12 cu.ft. capacity and $12 a year for 18 cu.ft. Charges for the service must naturally be based upon installation and operating costs of the individual plant. The Yakima plant, located in an old brewery building in the interior of a block, with several stories above the freezing room, and with very thick walls, enjoys low freezing costs and low investment charges as compared with a more isolated building or one built for the purpose. In connection with its warehouse business, including storage of furs, pianos, etc., it was already equipped with and maintaining a refrigerating plant, and this new service was but an adjunct, and, as it turned out, a profitable one.

The first freezing room, opened to the public in February, 1934, contains 400 lockers arranged along two aisles in a room of 3,840 cu.ft. Approximately 1,000 ft. of 2-in. piping is required, with 4 in. of cork on the floor and ceiling and 3 in. on the sides.

Within four months, patronage of the service had increased to such an extent as to warrant the fitting up of another locker room with capacity for 600 lockers, which work was undertaken.

One 13-ton ice machine has sufficient capacity to maintain refrigeration in the two locker rooms as well as for the other refrigeration services above mentioned.

The advantages of the freezing method of food preservation, over long periods of time, are well known. But the central freezing plant had not been available to the general public. Since this new plan enables the householder to obtain his food products from his own locker, in their original frozen condition, and since there is not a great deal for him to learn in connection with de-frosting and the proper and satisfactory methods of utilizing the frozen products, in this locality, at least, he seems to have been highly receptive, and the service met with enthusiastic and almost immediate response.

New Light on Rancidity

Explaining how anti-oxygens retard rancidity and how air, heat, light, metals and certain types of packages accelerate it

By G. A. WIESEHAHN
Chicago, Ill.

This is the second of two articles by Doctor Wiesehahn, concerned with rancidity and bringing together in brief space a summary of recent progress in dealing with this problem. The first article appeared in the May issue.—The Editors.

MANY factors, both chemical and physical in nature, influence the speed with which fatty foods go rancid. One group of chemicals, called anti-oxygens or anti-oxidants, acts to inhibit rancidity, and these compounds are responsible for the slowness of oxygen absorption by fresh natural fats and oils during the so-called induction period. They belong to the unsaponifiable part of the fat and probably are hydroxy compounds, pigments and in some cases protein material. They appear to be effective only against oxygen and not against oxidizing agents, and this behavior makes the term "anti-oxygens" more fitting than the more commonly used "anti-oxidants." Oxidizing agents, such as ozone or hydrogen peroxide, quickly destroy these inhibitors, and they also are rendered inactive by refining operations and boiling water.[1]

There are no data showing the influence which the composition of a fat has upon the onset of rancidity, but the effect of minor differences in fatty-acid composition is likely to be overshadowed by the effect of anti-oxygens. Even the highly unsaturated linseed oil has an induction period, though it is very brief.

The addition of preservatives to fats was attempted long ago. The use of gum benzoin to prevent rancidity in lard ointments is almost a century old, and apparently the Indians preserved bear grease with tree bark.[2] But real progress in this field was made only about a decade ago, following the pioneer work of Moureau and Dufraisse on anti-oxygens. And now the artificial compounds of phenol and amine character are being used in the manufacture of such products as rubber, gasoline and soap to prevent undesirable oxidations. Only a few hundredths of 1 per cent of a powerful anti-oxygen like hydroquinone is required to prolong the life of a fat considerably. However, the danger of accidental accumulation, nutritional considerations and legal limitations forbid the application of such products, except, perhaps, in coatings for containers.[3]

The discovery of natural non-toxic, anti-oxygenic substances has therefore been the goal of many workers. The use of unsaturated aliphatic acids, such as maleic, and their anhydrides[4], and the use of gum guaiac[5] have been patented, but their safety has not been established. Soya-bean lecithin can be used as an effective anti-oxygen without hesitation, but it imparts an undesirable color to the fat.[6] Carotene in the form of palm oil also adds color.[7] Sesame seed carries with it an odor, but this is not unpleasant.[8] The use of 5 to 10 per cent of hydrogenated sesame oil also has been patented,[9] and there is no doubt that other efficient natural anti-oxygens of value will be found.

In the manufacture of food products, anti-oxygens sometimes are used unknowingly. For example, the stability of prepared flours, which is surprising in consideration of the enormous surface of fat exposed to air, probably is due to constituents of the wheat oil. And in cake flours and mayonnaise, egg yolk exerts a preserving influence. Anti-oxygenic properties are ascribed to sugar used in baked products by Bohn and Olson, and it seems that some anti-oxygens survive the baking process whereas others do not.[10] Smoking imparts anti-oxygens to meat products,[11] and spices may contain both pro and anti-oxygens. For the stabilization of lard ointments, oil of pimento has been proposed.

IN another type of fat preservation, peroxides are recognized as the first product of spoilage and steps taken to reduce them. The use of some reducing substances during fat refining has been patented, as has the addition of phosphites to cereals for this purpose. For milk products, bacteria of high reducing power have been recommended.[12]

To preserve the natural anti-oxygens of a fat or oil and maintain its stability, air, heat, metals and light must be kept from the product as far as possible. Since rancidity has been recognized as an oxidation process, the simplest way out appears to be the exclusion of oxygen by vacuum packing. However, it has been found that vacuum storage as well as replacement of the air by carbon dioxide is effective only to a limited extent in prolonging the "shelf life" of a fat. This has led to the theory of loosely absorbed oxygen which cannot be removed by evacuation, but the fact that nitrogen and hydrogen are quite effective in preserving fats is not explained in this way. Even

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eight hours of evacuation prior to sealing could not eliminate the development of organoleptic rancidity in a fat kept in vacuo, although its highest peroxide value was but two milligrams per kilogram, which ordinarily is negligible.[13] In ketone formation, the presence of oxygen also has been found unnecessary, but it does accelerate the reaction greatly.

Increased temperature speeds up the oxidation of fats, as might be expected. Cold storage, therefore, exerts a preserving influence. Contamination by metals is now well known to be one of the worst sources of trouble, because traces of them, especially of copper, greatly hasten the onset of rancidity. Aluminum and tin are among the least objectionable metals used in the fabrication of equipment for handling fatty foods.[14]

LIGHT is a source of less trouble for the manufacturer than for the dealer, who displays his goods. Daylight naturally has more influence than lamplight, the blue end of the spectrum being the most active. Green transparent wrapping which absorbs all light beyond the wave lengths of 4,900-5,800 Angstrom units is safe,[15] and other colors also are safe if of sufficient depth.[16] Parchment was found to eliminate the active rays, as did wax paper. But as wax is autoxidizable, too, it is likely to induce rancidity in the fat which it is to protect. Greaseproofness of wrapping material is an important factor, because fat-soaked paper exposes the grease to the air on a large surface and accelerates spoilage.[17]

Two other factors are to be considered in storage—moisture and acidity. The former must not be allowed to sink below a certain minimum in such products as grain, milk powder and crackers. High acidity usually indicates poor keeping quality, perhaps because oleic acid is more rapidly oxidized than its glycerin esters.[18]

Much remains to be cleared up on the subject of rancidity. If a systematic attack on the problems were undertaken by men well acquainted with the many factors involved, the way out of today's uncertainty and conflicting views could be shortened.

Can't Buy, But They Eat

IN ITS endeavor to feed the destitute people of the nation and at the same time relieve the surplus of farm commodities, the government has maintained an important distribution of foods. From Oct. 4, 1933, through Dec. 31, 1934, Federal Surplus Relief Corp. moved into consumption 134,216,039 lb. of canned beef, 292,905,687 lb. of pork products, 737,090 bbl. of flour, 76,904,380 lb. of butter, 11,042,148 lb. of cheese, 23,867,730 lb. of lard, 39,298,176 lb. of rice, 46,975,200 lb. of cabbage and 90,120,000 lb. of potatoes, to mention the outstanding items.

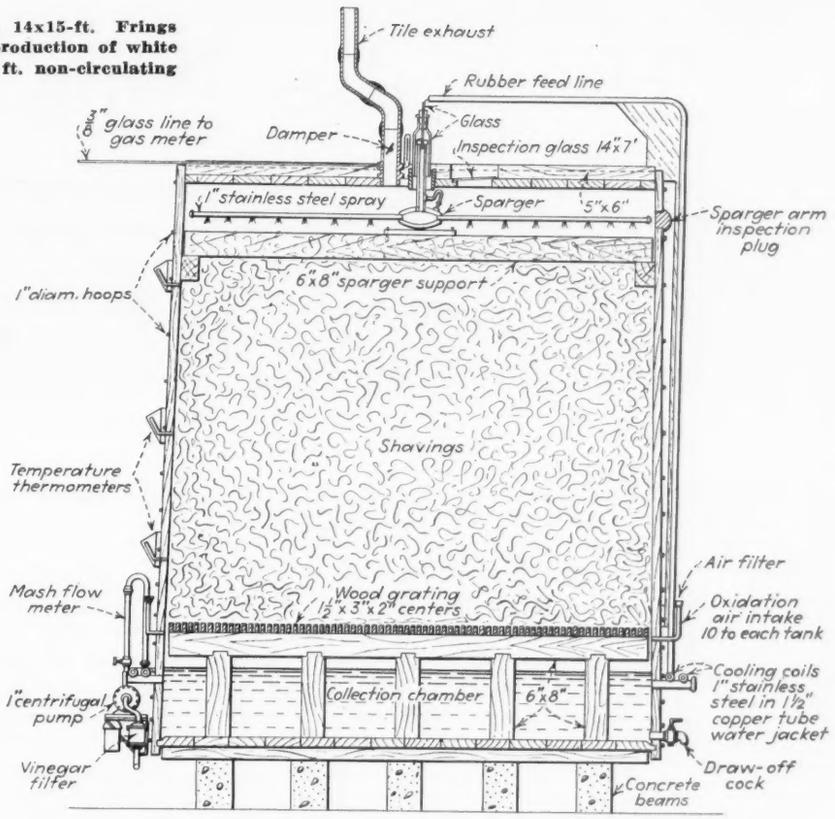
The complete list of food stuffs distributed through federal relief channels, together with expenditures, is given in the accompanying table.

Also significant to the food industries, but in an unfavorable way, is the fact that under the federal subsistence-garden program last year there was produced 44,608,777 bu. of food, of which 5,140,296 bu. was canned and preserved. More than 36 per cent of the fresh and canned fruit and vegetable requirements of FERA came from this source.

Amount of Foodstuffs Moved Into Consumption Through Federal Surplus Relief Corp. up to Dec. 31, 1934

Commodity	Quantity	State funds (Federal Surplus Relief Corp.)	Other funds (Agricultural Adjustment Administration)	Total expenditure
Apples, dried (lb.)	885,350	$121,100	.....	$121,100
Beans (lb.)	6,872,800	265,971	.....	265,971
Butter (lb.)	67,904,380	1,837,592	$14,550,874	16,388,466
Beef, boned (lb.)	12,870,111	191,792	.....	191,792
Beef, canned (lb.)	134,216,039	12,426,150	.....	12,426,150
Beef, fresh (lb.)	30,657,605	203,437	.....	203,437
Cabbage (lb.)	46,975,200	.....	.....	.....
Cereal food (lb.)	20,296,440	1,179,227	.....	1,179,227
Cheese (lb.)	11,042,148	45,072	1,835,647	1,880,719
Cocoa (lb.)	128,000	10,829	.....	10,829
Flour (barrels)	737,090	3,611,706	.....	3,611,706
Fruit, citrus (bags)	194,935	59,301	.....	59,301
Goat meat, canned (lb.)	874,800	.....	.....	.....
Lard (lb.)	23,876,730	825,342	335,694	1,161,036
Meal, corn (lb.)	790,000	20,140	.....	20,140
Milk, condensed (lb.)	790,000	58,712	.....	58,712
Mutton, canned (lb.)	707,400	75,115	.....	75,115
Pork products, total (lb.)	292,905,687	13,734,520	18,523,365	32,257,885
Pork, salt (lb.)	97,213,442	.....	.....	.....
Pork, smoked (lb.)	198,716,269	.....	.....	.....
Potatoes (lb.)	90,120,000	.....	.....	.....
Rice (lb.)	39,298,176	1,675,300	.....	1,675,300
Salmon, canned (lb.)	768,000	66,612	.....	66,612
Sausage (lb.)	384,000	46,957	.....	46,957
Sugar (lb.)	9,000,000	.....	372,176	372,176
Syrup (gallons)	724,743	233,480	.....	233,480
Veal, fresh (lb.)	75,285,731	302,738	.....	302,738
Total foodstuffs	.....	$36,991,093	$35,617,756	$72,608,849

Recirculation of acid-alcohol mix through the 14x15-ft. Frings generator under controlled conditions increases production of white vinegar 30-fold over that of the standard 4x8 ft. non-circulating generator.



Making Vinegar by the Frings Process

By A. E. HANSEN
General Superintendent, Libby, McNeill & Libby, Chicago, Ill.

WHAT is perhaps the greatest advancement in the commercial production of white distilled vinegar was introduced into this country about three years ago by the inventor Heinrich Frings, Bonn-on-the-Rhine, Germany.

Patent rights for the United States, covering the equipment and process, (U.S. Patent No. 1,880,381 granted Oct. 4, 1932), have since been acquired by Standard Brands, Inc., New York, N. Y. However, a total of 29 generators were sold by Frings to about a half-dozen relatively small users of distilled vinegar prior to the acquirement of these rights by Standard Brands, Inc. Consequently, today, there are probably not more than 50 of these generators in actual operation in the United States.

The essential differences between Frings generators and those used so extensively in the commercial manufacture of vinegar are: 1. each generator is from 25 to 30 times the size of the type generally used; 2. they provide for the recirculation of the mix, and 3. their operation is under complete and positive control. Otherwise, the Frings process is not greatly different from that in which the small generators are used.

Each generator consists of a large air-tight tank, usually 14 ft. in diameter and 15 ft. in height (the capacity of each generator may range from 1,000 to 15,000 gal.) supported on a series of solid concrete ties which permit free circulation of air beneath the tank. Near the bottom of the tank a strong wood grate or separator is mounted so as to support the beechwood shavings with which the tank is filled to within 18 in. of the top. The top of the tank is vented with a 4-in. pipe fitted with a specially constructed butterfly valve to control the amount of draft or air circulation admitted through a series of port holes about 4 ft. from the bottom of the tank. The tank is also fitted with thermometers at several points to indicate the temperatures of the acid-alcohol mix as it trickles down through the shavings. Inside and at the top is installed a sparger or distributing arm designed to distribute the liquor evenly over the top of the shavings. Around the tank near the bottom is mounted a double-pipe cooling coil consisting of a stainless steel or other corrosion-resisting pipe inside a larger water pipe to cool the mix before it is returned to the top of the generator. The intake to this coil is connected to a stainless steel circulating pump and the outlet is connected to a pipe which leads to the sparger in the top of the generator. Both the mix and the water lines are equipped with meters so that the flow of either can be controlled with accuracy.

THE first operation in this process is to prepare the medium or mix, made by diluting pure alcohol with water to a specified strength and then adding a small amount of "aceto-pep" (Frings special vinegar bacteria food). In practice, alcohol (S.D. 18), containing an equal portion of 100 grain vinegar is used. The vinegar must be added to comply with government regulations and is an ideal denaturing agent for this particular purpose. This mix is made up in 2,500 gal. batches so that when one batch of finished vinegar is drawn off, the whole of a new mix can be pumped into the generator immediately. Such a mix contains 10.5 per cent alcohol, 1 per cent acetic acid, and 7 lb. aceto-pep. Proper circulation of the mix is maintained throughout the run by the stainless steel pump which draws the mix from the bottom of the generator where it has reached the maximum temperature allowed and forces it at a regulated rate through the cooling coil where it is cooled to the desired temperature before it reaches the sparger in the top of the tank.

(Turn to page 312)

Who Makes Wine, and Why

American commercial wine makers still face competition from the home wine maker and the bootleg producer.

By W. V. CRUESS
Fruit Products Laboratory, University of California, Berkeley, Calif.

CONSUMPTION of commercially made wine in the United States in 1934 is estimated at 33,000,000 gal., of which 27,000,000 gal. came from California. Investigation of these California sales shows a peculiar trend. While before prohibition, dry wine sales of California wine far exceeded sweet wine sales, 1934 figures show that almost twice as much sweet wine was consumed as dry wine.

In spite of this apparent change in taste, various investigators have shown that America is still consuming more of dry than of sweet wine. In 1933, before repeal, California shipped 13,108 cars of wine grapes, last season, 13,058 cars.

West (West, C. H., *Wines and Vines, 16* (3), 4 (1935)), estimates that not less than 200,000 tons of grapes were used in these ways. Allowing 10 per cent loss in shipment and 10 per cent wastage, owing to inefficiency of home methods, there was made not less than 25,000,000 gal. of home-made and bootleg wine. Probably the total was much greater than this, because home wine makers and bootleggers often add water and sugar and thereby obtain a high yield. Call it 25,000,000 gal.; most of it was dry wine. This figure would indicate actual consumption in 1934 to have been about 35,000,000 gal. of dry wine and less than 20,000,000 gal. of sweet wine.

Home wine making is what ails the dry wine market. Home wine makers who thrived during prohibition are still making their own, probably largely because of high prices brought about by high state taxes and regulations that hamper the sale of wine in bulk.

Some home wine making will continue, no doubt, for some years, even after prices to the Eastern consumer become low because many families of Mediterranean origin prefer wine made at home.

AT PRESENT, however, it is probably largely a matter of price. The home wine maker residing in California can make his wine for about 25c. per gal.; and his Eastern cousin for about 75c., according to Pearce (Pearce, G. G., *California Journal of Development, 24* (12), 12 (1934)).

Because of the chaotic conditions then existing in the industry, the California Chamber of Commerce called a meeting of wine producers and leaders of allied industries in June, 1934. There followed a series of meetings resulting in the organization and practically unanimous approval of the Wine Institute on Oct. 20, 1934. It has been functioning since that date and is doing the many things that the Code Committee and the Western Wine Producers Association cannot do for the industry under the code.

OTHER activities under way that will tend to correct some of the difficulties of the wine industry include the following: The FACA, in consultation with authorized representatives of the industry, has drawn up minimum quality standards and definitions for the entire United States. Also the California State Board of Health is cooperating with the industry in the state to set up standards and definitions under the state's food and drug act.

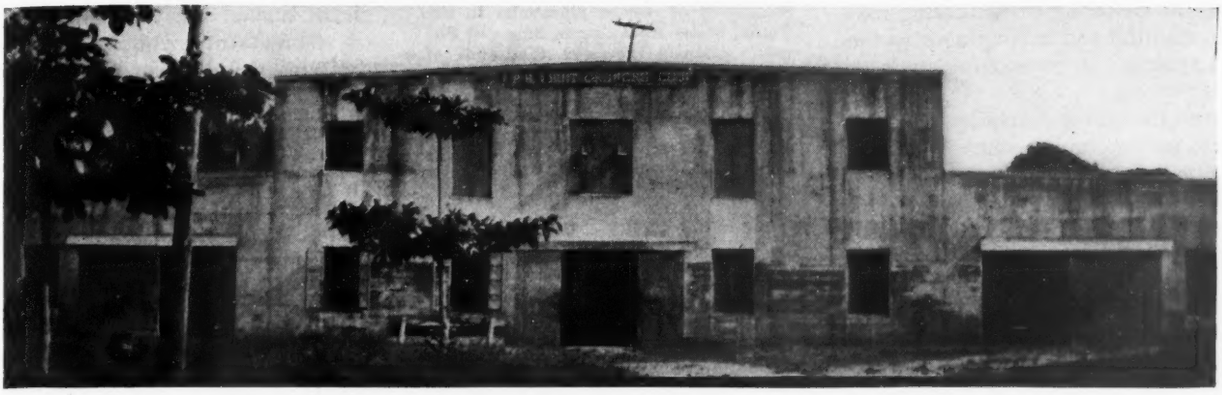
Technique of wine production is also being improved in California as a means of improving its competitive position in the U.S. market. Controlled fermentation, introduced 25 years ago, by the University of California, is being put forward again.

A new handling method, not used before repeal, chills the new wine to near the freezing point in order to cause rapid separation of cream of tartar, thus avoiding the several years' storage formerly necessary to permit this substance to crystalize from solution. Most of the large wineries, and many of moderate size, have now installed and are using low temperature equipment. The cold treatment also removes certain colloids and thus stabilizes the wine in respect to clearness. The treatment is usually less than three weeks.

Great improvements in the filtration and in the clearing of wine by fining have been made. Infusorial earth, in conjunction with filter presses constructed of corrosion-resistant metal, is in very general use. New wine can be filtered brilliantly clear by use of such filter aids.

Filtration, refrigeration, and the oxidation incidental to these operations cause new wines, particularly sweet wines, to age rapidly. It is no longer necessary for the preparation of bulk table wines of average good quality to age them in the wood for three or four years. With modern methods, a year or less is sufficient. Rapid aging, properly used, gives palatable, stable wines; but if overdone it may give wines of poor flavor which deposit bulky sediments in the bottle as a result of overoxidation.

TO SUM UP the wine situation in brief, owing to high taxes and restrictive legislation in many states, and to the fact that some unscrupulous distributors have unloaded imitation, adulterated and spoiled wine on consumers, demand at present is not as great as it should be. The Wine Institute, the FACA, the Western Wine Producers Association, the University of California and state officials are doing much to place the industry on a better basis. Improvement should be substantial and enduring.



This plant is typical of the pineapple canning establishments in Puerto Rico.

Canning Pineapple *in Puerto Rico*

Small-plant methods prevail. Tropical climate requires rigorous insect control and sanitation.

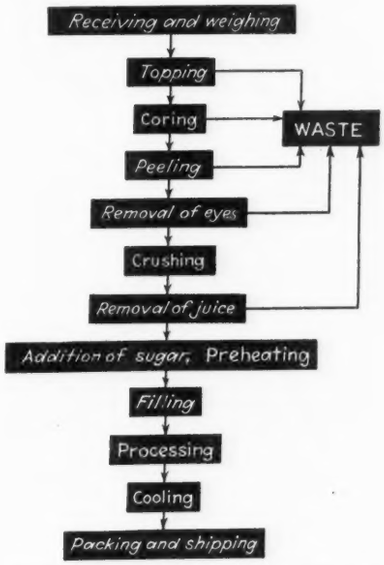
By MATTHEW E. HIGHLANDS

Research Associate, Department of Biology and Public Health, Massachusetts Institute of Technology, Cambridge, Mass.

PINEAPPLE processing in Puerto Rico is in reality a by-product of the fresh-fruit industry, the country shipping the bulk of its pineapples to continental United States in the fresh state. This is in contrast to Hawaii, where about 95 per cent of the product is canned.

Several varieties of pineapple are grown, among them the Red Spanish, Pan d'Azucar or Sugar Loaf, Cabezona or Giant Puerto Rican, and the Smooth Cayenne. But the main crop is composed of the Red Spanish, whereas the Smooth Cayenne makes up the bulk of the Hawaiian output.

Of the pineapple packed, most of it is crushed or grated. Some shapes, which include "fingers" and diced forms, are put up, but this is a small part of the entire output. Since much of the canned pineapple is utilized by the bakery and confectionery industries, it is often the practice to prepare the fruit in forms, and with various added amounts of sugar, desired by the purchaser. For this reason, too, varying quantities of juice are removed in some instances prior to canning; and at least one plant ships cores which later are candied for the confectionery trade.



Production flowsheet for pineapple canning in a Puerto Rican plant. Italics indicate hand work.

Until recently, the general practice was to discard the excess juice, but some plants now can it. And one plant put an experimental pack in glass bottles during the past year, utilizing "flash" pasteurization of the raw juice and following with a heat treatment in the bottles for 30 minutes at 180 deg. F. Little or no use is made of the peels and eyes as a byproduct, although they offer possibilities, as for instance, pineapple bran for stock feed.

PRODUCTION methods in Puerto Rico differ considerably from those in Hawaii in that more hand labor is employed. While the packing process varies with the plant, the accompanying flowsheet diagram gives an idea of general procedure. As the first step, all fruit is carefully inspected. The unsound is excluded prior to weighing and the sound placed in bins directly behind the coring machines. The tops are removed by hand with a twisting motion, the recess left by the removed top facili-

tating the centering of the coring machine mandrel and saving labor in the hand removal of core remnants later in the process.

From the coring machines the fruit goes to peeling tables, where the outer shell is removed by women using stainless-steel knives. Since the Red Spanish pineapple has rather deep eyes, it is necessary to take them out by hand, and the women do this with a small gouge of stainless steel or brass. The size of this gouge must be held at the minimum that is efficient, since several cases of canned product can be wasted in a day if the gouge is too large or the women are careless.

The fruit is next quartered and inspected for traces of core and eyes. Then it is carried directly to the crusher or grinder. The type of grinder used in most plants is similar to that shown in the accompanying photograph. In all the plants visited by the author, the fruit is preheated to 165-170 deg. F. after leaving the grinder. Then it is filled directly into No. 10 cans, sealed and transported to a continuous heating tank where it receives a process at 212 deg. F. for 30 minutes; no other exhaust treatment was observed in any plant visited. Preheating apparently serves the purpose of bringing the product up to a near processing temperature, and it is supposed to fulfill the exhaust function. On leaving the processing tank the cans are carried to a tank of cool water where they remain for 30 minutes. After leaving this tank, the product is ready for storage or shipment.

Shipments of canned pineapples to the United States from Puerto Rico and Hawaii.* (Figures represent thousands of pounds.)

Year	Puerto Rico	Hawaii
1928	2,281	495,686
1929	2,379	439,867
1930	4,826	423,170
1931	2,580	484,276
1932	606	388,069
1933	185	434,884

*From Statistical Abstracts of United States

Two methods of preheating are followed. One involves heating in open, steam-jacketed kettles made of copper lined with tin. The fruit may or may not have a portion of its juice removed at this time, and occasionally sugar is added. Filling from these kettles is accomplished by a hand ladle.

The second method of preheating is used where no sugar is added and no juice removed, this method being the more often employed. The fruit in this case feeds directly from the grinder to the preheater. The design of one type of preheater is shown herewith. The fruit enters at the upper end of the heater, which is usually located on an upper floor. When the heater is nearly full, the sliding gate plate is closed and the steam turned on. The only method of temperature control applied is sampling at the lower gate plate until the desired temperature is attained. The cans then are filled directly from the lower end of the heater.

One practice, the utilization of knocked-down cans, is almost universal in the Puerto Rican pineapple packing industry. The can bodies or sides are shipped in flattened condition to the factory, where they are reformed and the bottoms affixed by semi-automatic machinery. This procedure effects great saving in freight on empty containers.

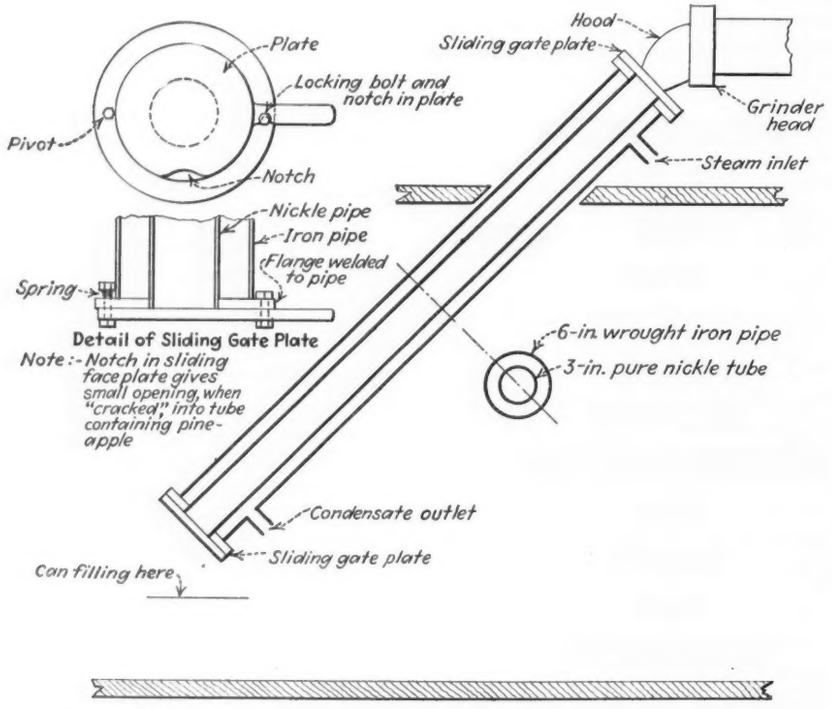


Diagram of preheater and detail sketch of sliding gate plate which closes it.

THE practice of plant sanitation in this tropical industry leaves much to be desired, generally speaking. The usual method is to wash the equipment, and occasionally the floors, with either hot or cold water and then apply live steam. While this procedure is an aid in keeping the plant and equipment clean, it does not always prevent the growth of microorganisms in the plant.

One plant, in addition to the above treatment, uses a spray of alkaline hypochlorite as added precaution. This application has proved most efficacious, particularly in preventing molds and yeasts from getting a foothold in the plant. Furthermore, the practice has been an indirect aid in keeping the plant free from one of the most troublesome pests, the so-called "mimi," a small fruit fly probably of the *Drosophilia* group. Since these flies are attracted by fermenting waste, strict sanitary measures help to eliminate them.

In the tropics, one encounters many ants and termites. These are readily attracted by a food plant, particularly if sugar or other sweet ingredients are used in processing. The use of sodium arsenite, as described by Stiner in FOOD INDUSTRIES (March, 1934), proved most effective in keeping the plant free from these pests.

The effects of a lack of plant sanitation are more quickly apparent in the tropics than in a cooler and drier climate. However, it is by no means impossible to successfully apply the principles of sanitary practice of temperate climates to a tropical canning plant.

Many improvements in production could undoubtedly be made in the Puerto Rican pineapple industry through the substitution of machinery for many of the hand operations, but the relatively small output apparently does not warrant the cost.

Tested Cleansers

for Dairy Plants

PART TWO

Sodium metasilicate and soap solutions may be used effectively on all types of equipment. Part one, dealing with cleansers for milk bottles and cans, was published in the May issue

By FORREST GRAYSON
Plant Superintendent, Ebling Creamery Co., Detroit, Mich.

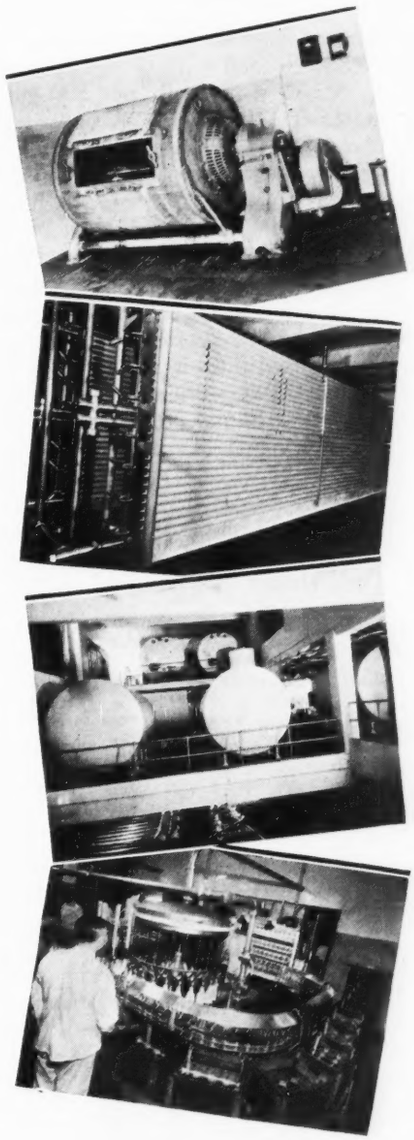
SODIUM METASILICATE always has rated high for general cleaning in the dairy plant. It is efficient because of its emulsifying and solvent action toward milk fat and casein. It is safe because of its extremely slight effect upon tin, aluminum and other soft metals. It is economical because of its positive detergent action at comparatively low concentrations.

But even so, the addition of 5 to 10 per cent of soap will appreciably improve its cleansing power, as with other alkaline cleansers. There is, in fact, such a marked improvement in detergent ability that a mixture of 93 per cent sodium metasilicate and 7 per cent of built soap (cold water Ozonite) has become a standard cleaner (built soap contains added alkaline salts). A powdered "olive" (low-titer) soap works just as well as the Ozonite, but it will not dissolve as readily unless mixed with the metasilicate in the wet stage. For the sake of convenience this sodium metasilicate-soap combination shall be referred to as MS from now on.

The use of MS has made possible the elimination of all milkstone. To speak broadly, it has speeded up every cleaning operation. Regenerators that formerly required two men three hours to clean with an abrasive cleaner now require two men less than two hours and a much better job is obtained.

AS a general recommendation for cleaning equipment which has contained cold, non-viscous products, such as milk or skim milk, use ¾ lb. of MS per 100 gal. of wash water. This amount should be doubled for pasteurizing tanks and holders, cream vats and the like.

The undissolved cleaner (with few exceptions) is not placed directly on a piece of dairy equipment. It is first dissolved in water and applied with a brush. Even when making up a cleaning solution in a trough, the cleaner is first dissolved in a pail of warm water. All equipment should be flushed with lukewarm water immediately after using and before applying the cleaner.



A few of the many types of dairy plant equipment for which a sodium metasilicate and soap solution is an effective cleaning agent.

In cleaning the receiving room and receiving equipment, the lines and pump are rinsed with water to clear out all milk. The cleaning solution is made up with 1 lb. of MS (previously dissolved in a pail of water) per 150 gal. of water at 120 deg. F. The pipes are allowed to soak in the solution and then brushed thoroughly inside and out. All receiving and weigh tanks are brushed inside and out with a pail of this solution.

In the milk storage department, the pipes and valves are cleaned with a solution of 1 lb. of MS per 100 gal. water at 120 deg. F. After the storage tanks and connecting lines are rinsed out with lukewarm water, the inside and outlet of each tank is brushed thoroughly with a solution made up of ⅛ lb. of MS dissolved in a pail (wooden) of 120 deg. F. temperature water.

FOR cleaning the pasteurizing and cooling equipment, a solution is made up in the cooler trough, using 6 lb. of MS to approximately 200 gal. of water at 120 deg. F. This solution is circulated through the raw-milk pump, inside of the regenerators, filters and heater and over the outside of the regenerators and coolers and back into the cooler troughs. Circulation should last at least fifteen minutes, and longer if necessary to remove all milkstone. The outside of the regenerators and coolers are brushed while the solution is being circulated.

A second solution is prepared for cleaning all sanitary lines, fittings,

pumps, the inside and ends of the heaters, filters and all compartments and attachments of the holders. It contains 1½ lb. of dissolved MS to 100 gal. of warm (120 deg. F.) water, mixed in a cleaning trough.

The long-flow holder is cleaned by placing about 1 oz. of MS in the end of each tube. A rotary pipe brush is then run the length of the tube and back, water being introduced simultaneously at the other end of the tube to avoid burning the brush by friction.

In the bottle-filling department all sanitary lines are cleaned in the usual way, using a solution of 1½ lb. of MS in about 150 gal. of water at 120 deg. F. The bowl covers, floats, filler tubes and valve parts all are thoroughly scrubbed with a solution made by dissolving 2 oz. of MS in 12 qt. of water at 120 deg. F. in a wooden pail. Other equipment sections are brushed with the more dilute solution. All rubber-valve parts are stored in a chlorine solution (100 p.p.m.) until the next period of use.

To clean the equipment in the cream department, 100 gal. of hot (140 deg. F.) water are placed in the coil cream pasteurizing vat and 1½ lb. of MS (previously dissolved) added. After thoroughly scrubbing all parts of the vat, the solution then is pumped over the surface cooler. This surface is brushed thoroughly during circulation.

If cleaning solution from the pasteurizing vat is not available, it can be made up in the cooler trough by adding ½ lb. of MS to 25 gal. of water at 120 deg. F. This solution also is used in brushing the viscolizer head, valves, gage stem and filter. All parts of the cream storage tanks are brushed with ⅛ lb. of MS dissolved in a pail of water at 120 deg. F.

For cleaning the separator in the returned-products department, ½ lb. of MS (previously dissolved) is added to 25 gal. of water at 120 deg. F. in a small wash tank. The machine is taken apart and all disks and other parts are soaked and brushed well with the cleaning solution. Rinsing is done with hot water.

The coil and all parts of the vat in the buttermilk department are thoroughly brushed with a solution of ¼ lb. of MS dissolved in a pail of water at 120 deg. F. Immediately after using the small churn, 10 gal. of warm (120 deg. F.) water is added. After draining, the churn is rinsed with scalding water and permitted to dry.

The coil vats in the butter department are cleaned with a solution of MS equivalent to 1½ lb. per 100 gal. of water at 140 deg. F. A pail of a similar solution from the cleaning trough is used on the cream ripening vat. One-fourth pound of MS in a pail of 140-deg. F. water is used for brushing all parts of the cutting table, cutting bar, head, worms, blocks, hopper, conveyor belt (both sides) and packaging table. Afterward, everything is rinsed thoroughly with scalding water. Large churns are cleaned by adding 150 gal. of 200-deg. F. water in which is dissolved 1½ lb. of MS. The churn is rotated for a few minutes, or long enough to remove all remaining solids. It is then drained and rinsed.

The cheese department vat is scrubbed with a solution of ¼ lb. of MS per 25 gal. of water. The package machine is rinsed with water at 120 deg. F., disassembled and all parts brushed with the regular solution from the cleaning trough.

For cleaning the chocolate-milk department, the concentrations and routine observed in the receiving room should be followed.

The acidophilus tank in the Walker Gordon milk department is first flushed out with water at 120 deg. F., then filled with water at 140 deg. F. A mixture of 6 lb. of MS and 3 lb. of flake caustic previously dissolved is added, and the solution is allowed to remain as long as possible between periods of use. Finally, all except 10 gal. is drawn off and the tank interior is scrubbed thoroughly, drained completely and rinsed with hot water. The lactic acid starter can receives 10 gal. of water at 120 deg. F. in which ½ lb. of MS is dissolved. It is brushed, emptied and rinsed with hot water.

Truck tanks, either glass-lined or steel, usually are scrubbed with a solution consisting of 2 oz. of MS dissolved in 12 qt. of water. Storage tanks receive similar treatment.

Ordinarily, the floors are scrubbed daily with the solutions from the various cleaning troughs. When very dirty, the floor is sprinkled with a small amount of the dry cleaner while damp and scrubbed vigorously.

IN USING these dairy plant cleaning solutions, it must be recognized that equipment and processing conditions seldom are identical for any two plants. Moreover, the type of water influences considerably the ease with which many cleaning operations can be performed. The water used in the plants mentioned above contains 97 p.p.m. (about 5.7 grains per gallon) total hardness. Of this, 78.5 parts represent the temporary hardness, while the remaining 18.5 parts account for the permanent. But it is significant that at country stations, where the water runs from 20 to 30 grains hardness per gallon, the same cleaning methods with sodium metasilicate and MS are followed with satisfactory results.

Despite differences in plants and water, the cleansing operations described in this article may be accepted as typical. With possibly slight modifications, they should prove readily applicable to existing conditions in the majority of dairies and creameries.

Cleaning solutions for dairy plant equipment

Operation	MS[1]	Water (gal.)	Temperature (deg. F.)
Receiving room wash trough	¾ lb.	100	120
Milk-storage tank	¼ lb.	3	120
Pasteurizing department wash trough	1½ lb.	100	120
Pasteurizing department circulating units	6 lb.	200	120
Long flow holder	1 oz.	per tube	120
Bottling department cleaning trough	1½ lb.	150	120
Bo· le fillers	2 oz.	3	120
Cream department pasteurizing vat	1½ lb.	100	140
Surface cooler, cream dept	½ lb.	25	120
Cream storage tank	¼ lb.	3	120
Separator	½ lb.	25	120
Buttermilk tank	¼ lb.	3	120
Small churn (buttermilk department)	¼ lb.	10	120
Large churn (butter department)	1½ lb.	150	200
Sour cream vat	½ lb.	50	120
Cheese vat	¼ lb.	25	120
Pasteurizing vat (butter department)	1½ lb.	100	140
Packaging machine (butter department)	¼ lb.	3	140
Acidophilus tank	6 lb.[2]	100	140
Starter can	½ lb.	10	120
Truck tanks	2 oz.	3	120

[1]Mixture of 93 per cent sodium metasilicate and 7 per cent built soap.
[2]With 3 lb. of caustic.

Mary M. Brooke

What the Baker Wants in

FLOUR

Getting the desired quality in the chief raw material ingredients is one of the greatest problems in food manufacture. Quality of finished product, selection of production equipment used, smoothness of factory operation, and type of production personnel employed are all dependent upon what the production man gets as his basic raw materials.

By MARY M. BROOKE
Purity Bakeries Corp., Chicago, Ill.

WHETHER his product is bread, pies, cookies, crackers, pretzels, or any of the other multitude of products ultimately offered directly or indirectly to the consumer the baker's requirement in a flour is that it have good, uniform baking characteristics.

Far as one may stray away from this statement in a maze of detail of specifications and specific needs, any or all of them come back to the same generality. Any specifications set up by the baker are an attempt to insure these characteristics, however badly he may be misinformed or misled as to their value as a yardstick of flour quality.

Having answered this question with a simple statement, we next find ourselves confronted with at least three more questions which naturally follow and whose answers are far from simple. (1) What are good characteristics viewed from the angle of production needs? (2) How may these characteristics, as determined, be found in the wheat or imparted in the milling? (3) How may uniformity be attained when naturally non-uniform raw material is used? The answer to the first of these questions is the theme of this article. The answer to the second and the third we shall leave to some one more experienced in wheat selection and milling.

As the needs of the particular baker may vary with his formulas, equipment, and method of operation, any flour chosen at random may not fit these needs. This is particularly true of flours from various geographic locations. This does not condemn the flour as being unfit for another's use nor even qualify it as a poor flour. Also it does not mean that minor, permissible adjustments of time and temperature may not be made to adapt conditions to the idiosyncrasies of any particular flour. It does mean, however, that some flours are better adapted to meet certain shop conditions and demands of certain types of goods than other flours.

THE baker having found the type of flour best suited to his purpose will then use it as a yardstick for measuring others and will regard its factors as specifications of purchase. He, then, wishes to be assured that he can rely upon uniform deliveries of this particular type and grade.

As a cereal chemist, I would prefer to state that certain chemical factors and quick laboratory tests can be used to determine these qualities. Unfortunately, at the present time, this is not true. Chemical factors, such as protein and ash, are only indicators of strength, grade, and uniformity of milling. We must rely upon the baking test, whether made in the laboratory or plant, for test of baking characteristics. Fortunately, the chemist is best qualified to make these tests and to interpret the results. Together with the chemical factors, he may then obtain a complete picture of the action of the flour and some idea of its milling.

In making these statements, I do not wish to belittle the role of the cereal chemist. While we have yet to find a quick or a chemical method of measuring baking quality, we know more and more of flours and the whys and wherefores of certain baking characteristics which they possess. We are able to change appreciably some

of these characteristics by the use of maturing and bleaching agents, by the addition of malted grains, and by milling practices, all well controlled.

SO far we have dealt with generalities with no reference to specific needs for any particular type of baked goods.

The bread baker demands that a flour have strength ranging from, let us say, 11.5 per cent protein for a close grained pan bread to 13.5 per cent protein for the large open textured hearth loaf. This variation in strength may be obtained in flour by blending hard winter, hard spring or Pacific coast wheats or more commonly by choice of wheats from various geographic localities. The softer, mellower flours are found in the Oklahoma and Pacific coast blue stems—all winter wheats. From this base the next stronger flours range from those of the winter wheats of Kansas and Nebraska to those from the extremely strong wheats of Panhandle Texas. Flours of the greatest strength are obtained from the spring wheats varying from the softer Nebraskas to those increasing in strength as one travels north to the extremes in Canada.

The strength demanded is the factor that varies widely from shop to shop and from plant to plant. Just as the baker making a pan bread does not need the strength required by a baker making a hearth bread so a plant equipped with modern high-speed mixers requires a flour with more strength than does a plant equipped with slower mixers which will handle softer and mellower flours requiring no mechanical development. If the baker is greatly interested in, let us say yield of 180 lb. of bread to 100 lb. of flour he will want a higher protein and stronger flour than the baker who is more interested in a finer, closer-grained loaf of bread or only 160 lb. of bread from 100 lb. of flour. All of these and many more factors enter into the choice of the strength of flour.

No matter whether the baker chooses a flour with a high protein content of 15 per cent or a low of 11 per cent he wishes to be assured of stability. By stability we mean the ability to hold its strength under the normal conditions of mechanical treatment of mixing, dividing and molding and fermentation. A flour which does not have stability will become slack and sticky in the dough. In using the numerical values to illustrate the range of flour strength we want to keep in mind our previous statement that percentages of protein are not exact yardsticks of measurement but rather mere indicators of strength.

As to fermentation tolerance, the baker wants to be assured that it is not too critical. Some plants, regulated and run on a very strict schedule of fifteen minutes between doughs can operate with a much sharper curve of tolerance than one which may have a fermentation time difference ranging from + 30 minutes to one hour. But the best run plant can have breakdowns and delays, consequently the baker wishes the insurance of enough tolerance in fermentation time to assure him of saleable bread in the face of reasonable delays.

The use of bleaching and maturing agents is almost universal. The amount of these agents and particularly the type of maturing agents have a decided effect upon the baking characteristics of the flour even when properly treated for better performance. Any variation in this treatment will become quite apparent in the action of the dough as well as in the appearance of the finished bread. Consequently, uniformity of flour treatment is highly important.

With the advent of combine harvesters, drouths, and better understanding on the part of the cereal chemists, we have found that many wheats lack diastatic activity. By the use of malted grains, these deficiencies may be overcome. But again great care has to be taken that the malt treatment matches the diastatic deficiency and that the finished flour runs uniform as to diastatic activity, that it is sufficient to give uniform bloom and development to the bread.

Water absorption power was at one time considered a very important factor in the quality of flour. Today the well informed baker knows that if the specifications of stability and fermentation tolerance are met that the absorption will be normal at about 65 to 70 lb. of water for 100 lb. of flour for strong flours to 60 to 65 lb. of water for each 100 lb. of a weak flour. Other ingredients used in the manufacture of bread affect the dough absorption of water to a greater extent than do variation in flour absorption.

The cake baker requires a flour which has the strength to carry whatever ingredients, such as sugar, milk, eggs, shortening, he wishes to use and at the same time have a mellowness and refinement of gluten quality which will give him a fine, even, and velvety texture measured by the standards he has set up for his cakes.

IDEAS regarding cake flours have changed rather radically in the last two or three years. With few exceptions the cake baker of a few years ago asked for an extremely soft, almost characterless flour, soft wheat flour, which carried and required the minimum of enrichening ingredients; for example 85 lb. sugar, 90 lb. liquid per 100 lb. flour.

With studies made of consumer demand and housewives' formulas or recipes, the baker has discovered that the most acceptable cake is one which carries a high percentage of these enrichening ingredients and liquid; 140 lb. sugar, 120 lb. liquid per 100 lb. flour. He now demands a flour which will carry these additions without any harshness of gluten being apparent, usually milled from soft winter wheats of white or red variety, principally from the white.

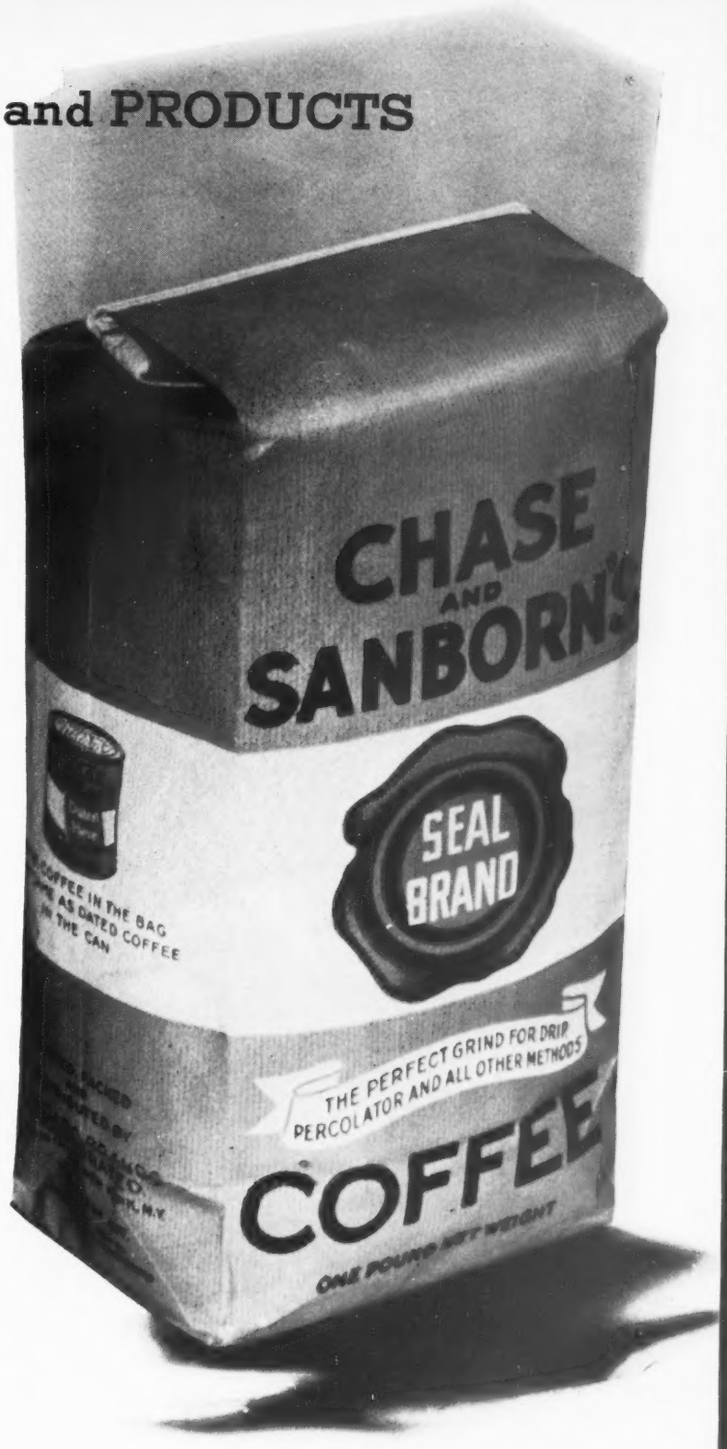
Because of the fragile character of the gluten and the exaggerated load which it must carry, great care has to be taken in bleaching and maturing treatment of cake flour. Milling refinement also shows results in cake flours more than in bread flours as represented by color and fine texture. The effect of diastatic activity or lack of this function or other enzymatic activities are the basis of much research and study at the present time as an application to the baking qualities of cake flours.

The pie baker's choice of flour is entirely dependent upon the type of crust and the formula which he wishes to use. There is an extremely wide variation in the type of crusts which pie bakers make from the flaky to the mealy crusts. Flours vary from strong, high-protein (13.5 per cent) types to the softest, low-protein (7 per cent) types. Some bakers even specify flours of high (2 per cent or even greater) fat content.

Here again, the baker chooses the type of flour which suits his needs best and asks the miller to supply it uniform as to analysis and strength. Such being the case it is the task of the cereal chemist to interpret these needs, of the baking chemist to interpret the flour, and of the milling chemist to interpret the wheat into the baker's needs. Fortunately our means of interpretation are becoming more extensive and comprehensive each day.

FOOD PACKAGES and PRODUCTS

New



Coffee Back to Bags. History was made in the coffee industry when Standard Brands, Inc., New York, put its Chase & Sanborn's dated coffee in paper bags on May 1. Forsaking the sealed tin container which it introduced back in 1878 as the best available method of preserving the freshness of roasted coffee, the company adopted the paper bag to effect a 3-cent-per-pound cost reduction. The bag itself is comparatively inexpensive, and it makes possible other savings. Distribution costs are lower because coffee packed in this manner weighs only a little more than half as much as when packed, for example, in a vacuum tin.

Of the type made famous as a coffee package by the Great Atlantic & Pacific Tea Co., the bag is a double-walled container with a roll-type closure. It is closed by hand, a metal insert being bent over the edges of the roll. The inside wall, or liner, is of dry-waxed glassine. Coffee will keep in the paper package for 21 days, the same as in a sealed tin container, the company states.

This development in coffee packaging, which may have far reaching effects because of a competitive price situation which it brings up, was made after two years of market studies in the South. It has not yet been put into effect in Chicago, because of labor difficulties, but it is effective elsewhere and is said to be welcomed by the trade and by consumers.

Coffee Protects Itself. A container which utilizes the carbon dioxide given off by coffee to protect the product against deterioration by oxidation is being used by Brewster Gordon & Co., Inc., Rochester, N. Y. In this container, which is in effect

FOOD PACKAGES and PRODUCTS

a venting glass jar, the oxygen is forced out by the "roast gases."

The jar, a development of Vacuum Jar Corp., New York, is a wide-mouthed, cylindrical unit with a flat glass lid. Between the lid and the rim is a rubber ring which effects a "hermetic" seal as soon as the atmospheric pressure on the lid exceeds the pressure within the container.

Brewster Gordon reports a 40-per cent increase in sales of its "Veteran" coffee since adopting the new type of package about two months ago, and the company looks for a far greater increase during the home-canning season, since the jar can be reused by the housewife for kitchen vacuum packing. And the company states that in addition to doing away with vacuum machinery, it has speeded up production with the venting jar, being able to pack the coffee immediately after roasting and grinding instead of letting it set for 12 to 24 hours for the roast gases to escape. Moreover, packing immediately eliminates moisture absorption and loss of essential oils, the manager of the company's coffee department states.

Wrapped Eggs Better. Cartons wrapped with transparent cellulose are becoming popular with packers of eggs. Among those companies which have found this new type of egg package more effective are H. C. Christians Co., Chicago, June Dairy Products Co., Inc., Newark, and Kenrich-Britten Co., New York.

Tests made with eggs in cartons overwrapped with sealed M.S.T. Cellophane revealed some interesting data. Half of a supply of fancy grade A eggs, less than 72 hours old when received, was packed in wrapped cartons and half in unwrapped. At the end of five days under room conditions, 97.22 per cent of the wrapped eggs were still grade A, while only 80.60 per cent of the unwrapped were in that class.

The unwrapped eggs lost 1.3 per cent in weight in five days under room conditions as against 0.05 per cent for the wrapped.

Artillery Oats. Oat Puffs, a "shot-out-of-gun" cereal of Plews Puffed Products Corp., is put up in a simple but effective transparent cellulose container. While giving ample visibility to its contents, the package carries on its front the name of the product, the likeness of a cannon discharging puffed grains and the messages, "No cooking required" and "Just add hot or cold milk and sugar."

Spotlight Wrap. Metal foil underneath a printed glassine wrapper gives quite an attractive "spotlight" effect, so Williamson Candy Co., Chicago,

FOOD PACKAGES and PRODUCTS

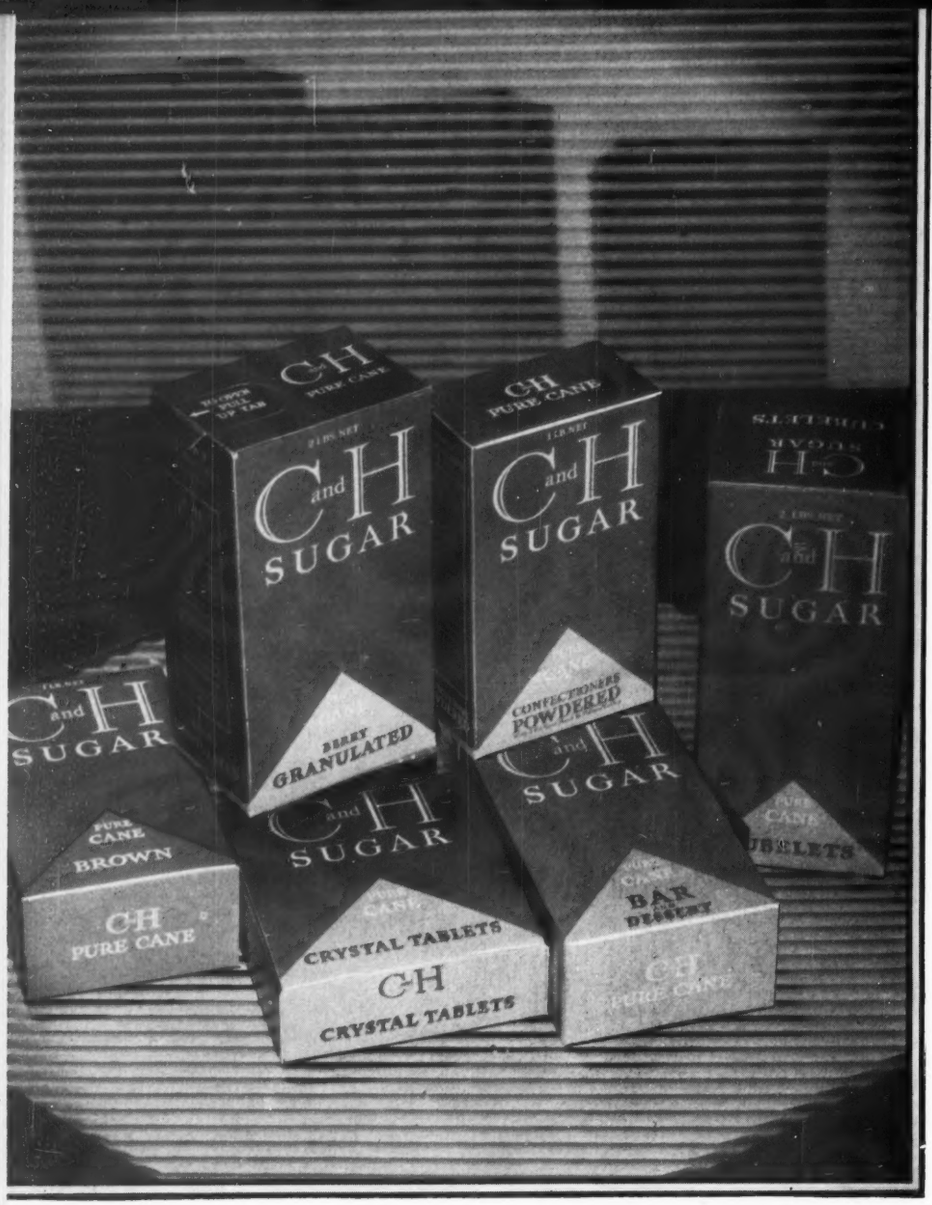
has found. This type of package is being used by the company for three of its bars: Oh Henry!, Almond Roll and Oh Jo. The glassine carries a modernistic design done in bright, contrasting colors. The Oh Henry! wrapper, to take one example, has a light, translucent yellow panel about 1½ in. wide, on either side of which are horizontal bars in deep yellow and blue. The brand and price are printed on the panel in blue and deep yellow, and backing up the panel is a strip of embossed silver foil.

Colonel's Family. In designing the "family" package for its four varieties of brown and white rice, Mailliard & Schmiedell, Los Angeles, had in mind the fact that self-serve grocery stores place a high premium on shelf appeal. For the white rice, the upper two-thirds of the front and sides is printed in silver; the lower third in dark green. In the large upper panel appears the figure of the "Little Colonel," along with the brand name. The design for brown rice is similar, except that the upper part is in gold and the lower in dark brown. Two grades of both the white and brown rice are packed in these 2 lb. containers. The carton is tight-wrapped with paper upon which the label elements are printed.

Wraps Corn on Cob. Even corn on the cob is packaged and branded, having appeared on the Boston market recently in this form. Shipped from Florida by Louis Marks, the ears are neatly trimmed at the end and have a strip of husks removed to display two or three rows of grains. A label is placed over the ear at the middle, and over all is a wrap of Cellophane. A contrasting red ribbon of cellulose film sets off the label insert.

Oriental Tea Tin. A container which is both attractive and symbolic of the Oriental origin of its contents is the tea caddy of Thomas J. Lipton, Inc., Hoboken, N. J. A winner of the silver-medal award in the metal container group of the All-America Package Competition, the can is rectangular in shape, with rounded corners, and is enameled with an exotic Oriental scene in colors, orange and yellow predominating. Unbroken by panels, the scenes appear continuous viewed from one corner of the package. The container is of tin in a brass finish. For holiday distribution, a special printed transparent wrapper gives the proper atmosphere.

Pastel Tin for Tea. Tea is being packed in a convenient and attractive round tin container by Central Wholesale Grocers, Inc., Chicago.



A few of 70 C&H packages given a family resemblance.

The artistic design of the can suggests a high-class, delectable product, being of a conservative modern motif and done in a pastel color. To seal in the flavor and aroma, the can is equipped with a friction-type inner closure. Over this is a lid which locks in place on turning. This can is made by J. L. Clark Manufacturing Co., Rockford, Ill., and the company has incorporated the idea of delicate coloring and design in a baking powder can for Sprague, Warner & Co., Chicago, and in a spice can for Furst-McNess Co., Freeport, Ill. The spice can has an additional feature in the form of shaker perforations and an opening of a shape and size to accommodate a spoon, these being covered by a rotating cap.

70 Packages Revamped. When California and Hawaiian Sugar Refining Corp., Ltd., San Francisco, decided to have its line of packages redesigned, it was the case of an old established company restyling some 70 different kinds of containers—cardboard, cloth, burlap, fiberboard and even wood. In approaching this packaging problem, the company kept in mind that it had a staple commodity supported by little advertising and that the sizes and shapes of sugar containers are largely uniform throughout the country. This meant that the new design must attract attention to the product and establish brand recognition and preference. In deciding upon the label elements, these questions were asked: What does the consumer look for? What do we want her to look for? The consumer looks first for "sugar"; second, the kind—cane, powdered, granulated or what-not. And the company wants her to look for its brand. Accordingly, everything else, except the net weight, was ruled off the face of the cartons.

The design adopted established a common brand identity by background arrangement and by giving prominence to "C and H." For the nine different cardboard cartons, not only the same general design but the same blue background was maintained. To help differentiate the kinds of sugar, various colors were assigned to the pyramids on the face of the packages.

A fundamental consideration in the redesign of the C and H packages was that the new container was to be "permanent." All "jazzing" and "fads" of the moment were avoided.

Shaker for Olive Oil. An idea that ought to increase the use of olive oil in the kitchen manufacture of French dressing has been hit upon by Pompeian Olive Oil Corp., Baltimore. It involves a glass container which may be used as a French-dressing shaker,

Patterned after a cocktail shaker, the container for Pompeian olive oil serves as a mixer for French dressing. It has empty space to receive ingredients which go with the olive oil.

or mixer. There are 5 oz. of oil in the package and enough space left over that the consumer may add the other dressing ingredients. The shape of the package permits a good hand grip, and making the dressing is no trick at all. This jar is not more than two-thirds full of olive oil, yet it is so designed as to avoid a slack-filled appearance, except upon close examination. At the level of the oil there is a corrugated "set back" above which is a label completely surrounding the jar and covering most of the empty space. Then, too, the label explains the reason for the container's being partly empty.

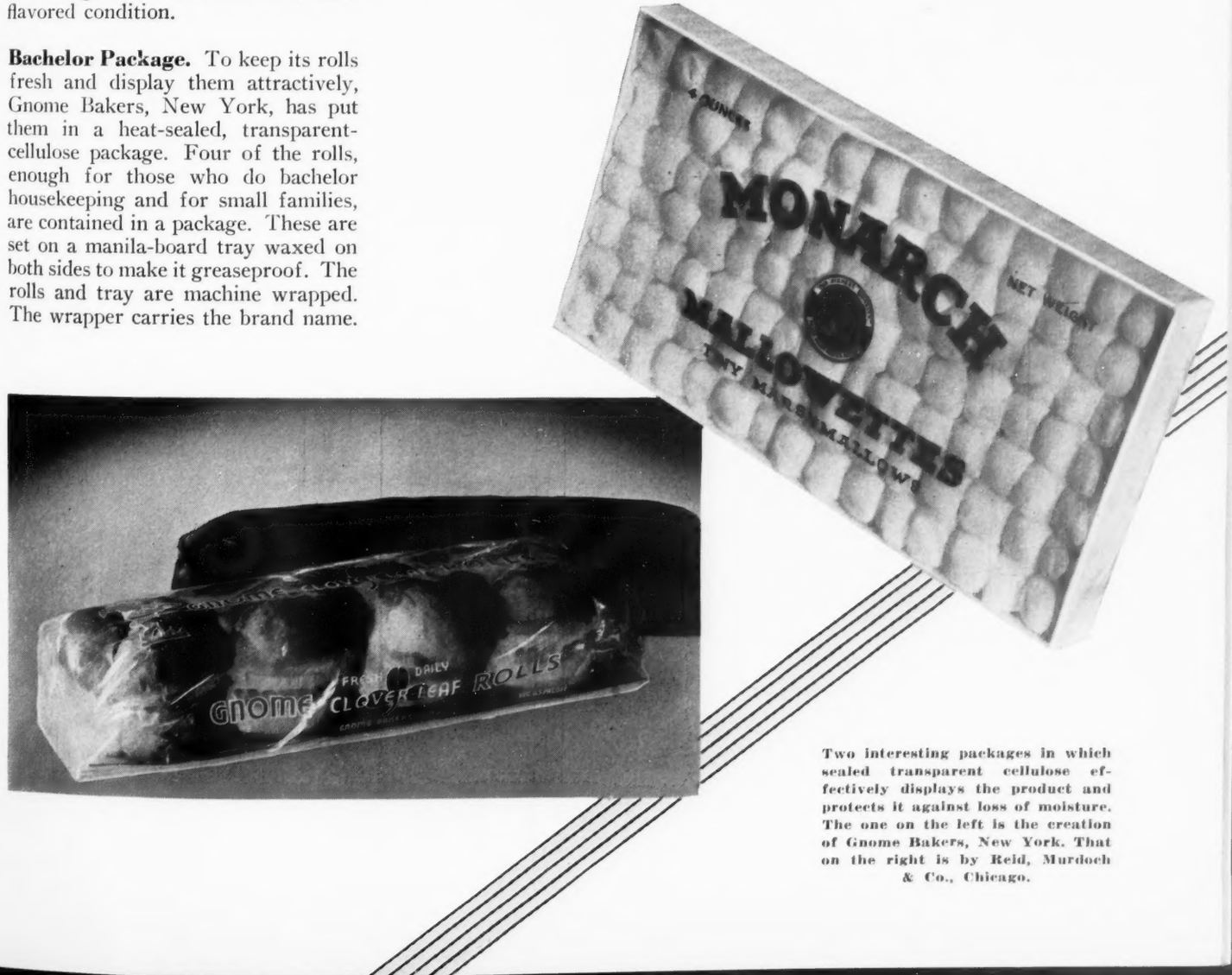
Broccoli In Tins. Canned broccoli is a new item brought out this season by San Jose Canning Co., Portland, Ore. Carrying the well-known "Patricia" brand, the broccoli is packed in a 28-oz., key-opening can in asparagus style. But half the heads are at one end and half at the other to prevent crushing the delicate leaves. Broccoli can be canned only about 60 days out of the season if it is to be gotten in a delicate and well-flavored condition.

Bachelor Package. To keep its rolls fresh and display them attractively, Gnome Bakers, New York, has put them in a heat-sealed, transparent-cellulose package. Four of the rolls, enough for those who do bachelor housekeeping and for small families, are contained in a package. These are set on a manila-board tray waxed on both sides to make it greaseproof. The rolls and tray are machine wrapped. The wrapper carries the brand name.

Corn Chips. In the Southwest there is being distributed by the Frito Co., Dallas, a potato-chip competitor made from corn. Processed from the whole grain after the fashion of Mexican tortillas, it is deep-fried in cooking oil. A crisp, flaked product, it is packed in 5-cent packages and sells at the rate of about ½ million bags a month. The container, a waxed glassine bag closed by rolling and stapling, is decorated in red.

Convenient Chocolate. A chocolate powder which goes into solution almost immediately has been put on the market by Kraft-Phenix Cheese Corp., Chicago. This "Ten-Stir" chocolate enables the consumer to make hot chocolate by the addition of water or milk. Distributed nationally and reported a heavy seller, "Ten-Stir" is chocolate with Dutch processed cocoa, milk and sugar added to produce a good body, aroma and delicacy of flavor. Sixteen cups can be made from 1 lb. The product is packaged in a 1-lb. tin and in a 1-oz. envelope, both of which have a concentric brown and white color scheme suggestive of stirred chocolate.

Baby Marshmallows. For the convenience of consumers, and incidentally to increase sales, Reid, Murdoch & Co., Chicago, started distributing tiny marshmallows which do not have to be cut up when used in salads and desserts. The Mallowettes are attractively packaged in a white, tray-type cardboard container wrapped in transparent cellulose. The necessary label elements are printed on the cellulose, showing up effectively against the snow-white background formed by the product. Tightly sealed, the wrapper protects the Mallowettes from drying out, at the same time displaying every piece in the package. The package contains 4 oz., the amount ordinarily used at one time by the housewife, so none of the product goes to waste.



Two interesting packages in which sealed transparent cellulose effectively displays the product and protects it against loss of moisture. The one on the left is the creation of Gnome Bakers, New York. That on the right is by Reid, Murdoch & Co., Chicago.

The GANG Principle

Shall packaging be "Single File" or "Company Front"?

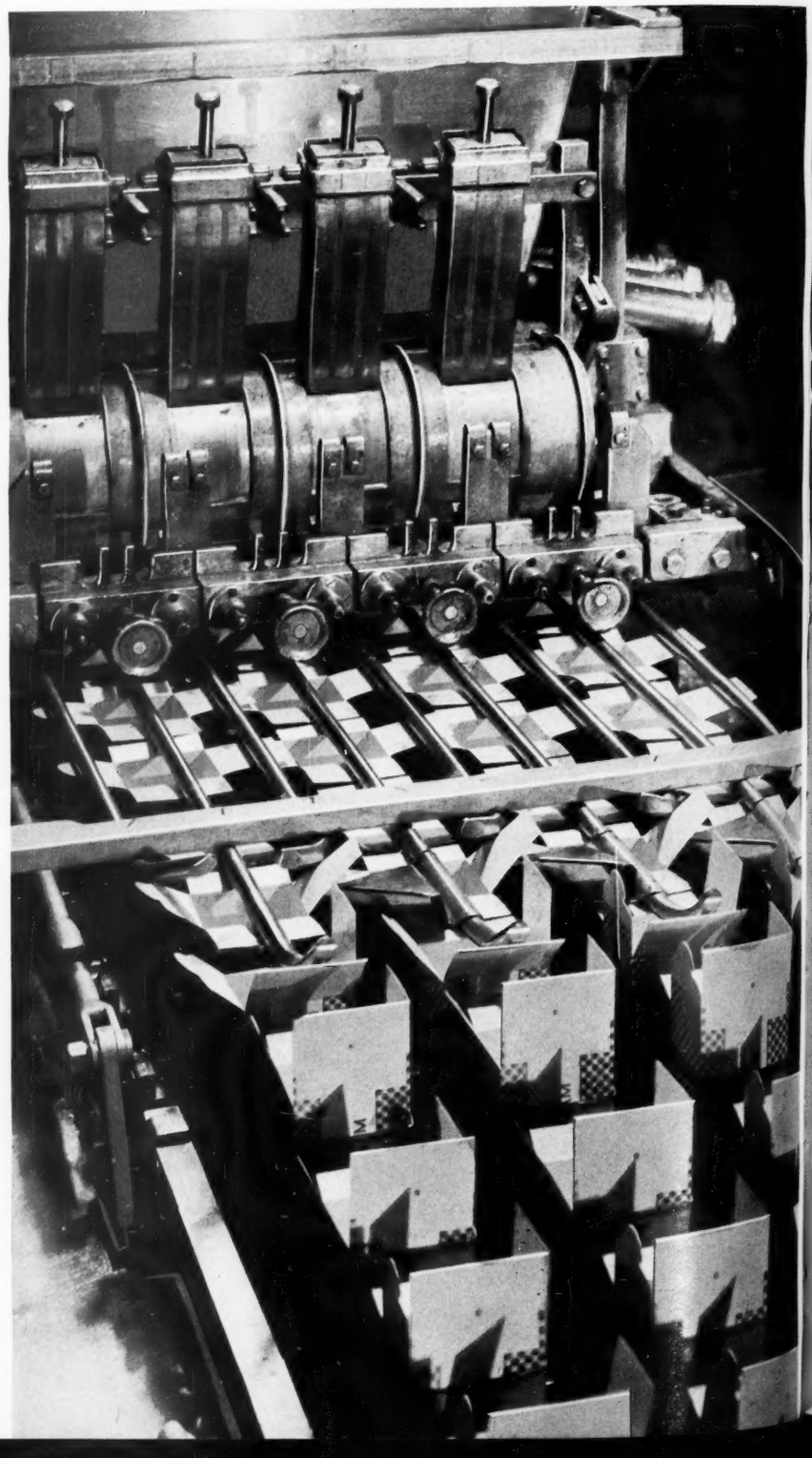
By FRANCIS CHILSON
Consulting Packaging Engineer,
New York, N. Y.

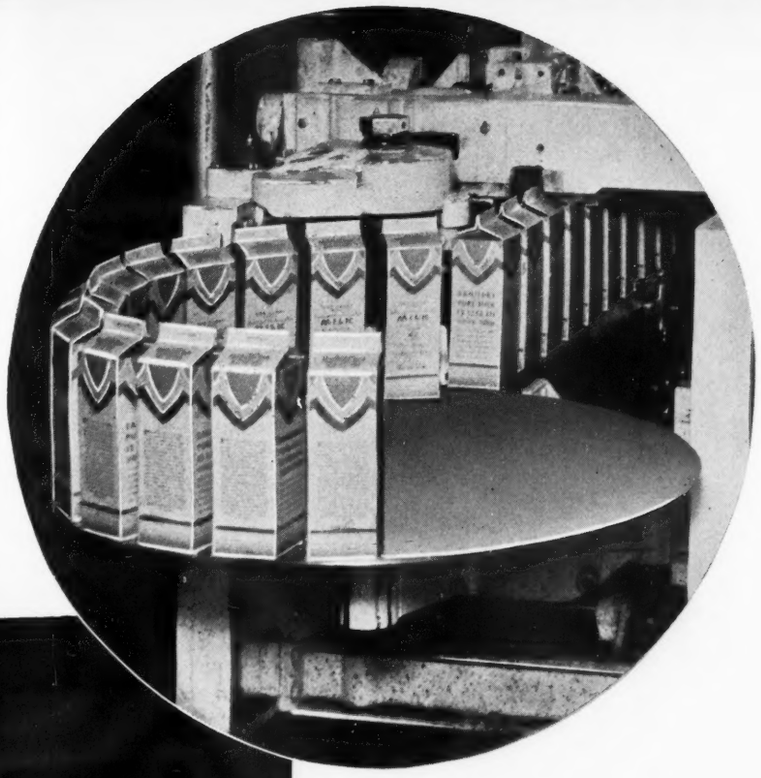
WHERE is the economic end-point in packaging speed? Packaging machinery people are likely to answer "about a hundred average-size packages per minute." But when you hear of Corn Products Refining Co. filling Karo syrup at a rate of 270 per minute and the American Chicle Co. wrapping penny chewing gum with two wrappers, a label and a tear-string at 280 per minute, you begin to wonder whether we are anywhere near top speed in packaging food products.

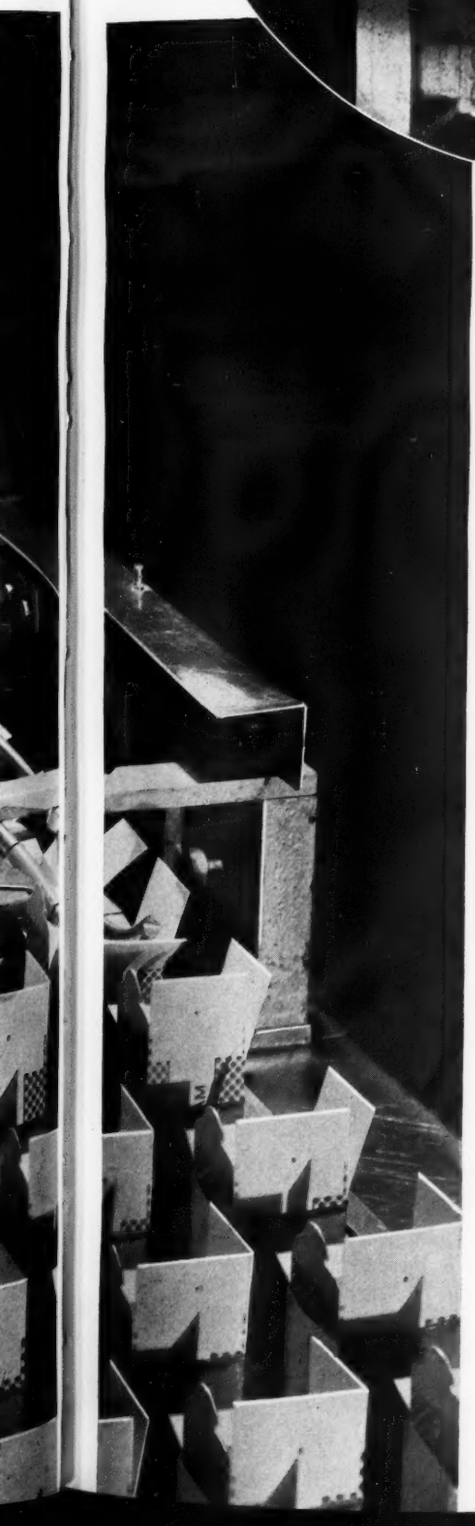
The average packaging speed of modern automatic equipment is slightly less than 100 per minute; there being a few instances of 120 and 150. When packages are assembled in single file the going is pretty tough after the speed tops 100 a minute unless they are very small. Some of the packaging equipment people are likely to take the position that an insufficient number of manufacturers have such a volume of production that they need equipment capable of an average speed in excess of 100 per minute.

The question of whether or not a manufacturer has a sufficient volume of one item to require production speed in excess of 100 per minute should not limit progress. With increasing food costs, increased labor costs, increased taxes, and increased overhead in every direction, the manufacturer is obliged to find a counterbalance somewhere. In our opinion this lies in greater speed, so that a given investment in labor, equipment and buildings will produce a greater amount in a specified period of time. The profit in closely sold, large-volume items like most canned foods often depends entirely upon production speed.

Before the little local food companies of fifty years ago could become nation-wide distributors, they had to







have production speed. Now that they are on a national basis and are confronted with increased business costs on every hand, they are again looking to speed in production as a means of keeping costs per unit within practical bounds.

ALONG with the demand for speed is an increasing demand for an extreme degree of flexibility. The food manufacturer wants equipment that is flexible not only as to container size but as to product as well. This is the answer to the question raised above as to whether the average manufacturer has enough volume of any one item to warrant equipment speeds greater than those obtainable with modern standard equipment. As a matter of fact the manufacturer of a variety of products is even more justified in his demand for speedy, flexible equipment than the manufacturer of a specialty. His ordinary costs are greater in every respect than the costs of the specialty maker. He buys a greater variety of raw materials in smaller quantities and consequently pays more for them. Diversity of purchases increases handling costs, storage space, spoilage, and clerical overhead. Moreover, the manufacturer of a variety of products usually has a greater equipment investment in proportion to sales than the specialty manufacturer. So when he demands speed and flexibility in packaging equipment, he does so in the knowledge that herein lies the only way he can make substantial reductions in cost. When he can package twenty or thirty items at high speed on a single line by simply washing out the equipment after running each individual product, his investment is working all the time and "idle machine hours" are no longer important. But speed and flexibility go hand in hand.

Not so long ago wrapping machinery people insisted that automatic wrapping machines could not be made adjustable, nor could they be made to wrap cylindrical packages. Both hurdles have now been cleared. Vacuum filler builders used to insist that a vacuum filling machine could be used only for relatively thin, non-viscose materials. Now vacuum fillers are used for filling condiments, preserves, relishes, mustard, salad dressings and other relatively thick materials. Indeed, vacuum liquid fillers have even been used for filling powders!

At this point the packaging machinery maker is likely to say, "Fine, we can give you flexibility much easier than we can give you speed in excess of a hundred containers per minute." They will then proceed to show why such excessive speeds are impractical. They will show how excessive speed puts a terrific strain on the mechanism; they will show how inertia and other factors need a certain time interval to get under way. All of which is granted out of hand.

But when high speed is required, is single package handling the way to get it? Frankly, we believe not. It is our opinion that the way to assemble packages is in "company front" formation instead of single file. Already gang-type filling machines are available which will deliver considerably more than a hundred containers per minute. There is one gang-type labeler that will turn out more than a hundred and thiry containers per minute. One gang-type capping machine was perfected by an outfit which hadn't enough money to put it across. But the present snag is that we haven't gang-type automatic cappers, cartoners or wrappers. When gang-type fillers are used they are set at right angles to a conveyor belt which carries the containers single file into a capping or sealing machine.

BUT *why* gang-type packaging machines? The person who has not used them will ask. The answer lies in the way they are constructed. In the case of a gang filler ten to twenty

filling nozzles are lined up in a row across the conveyor belt instead of parallel with it. Assuming that each nozzle is filling ten containers per minute (which is an extremely slow speed as compared with single-file machines), then a machine with twenty nozzles would turn out 200 containers per minute. A second advantage is that gang-type equipment takes no more space than any other type because the operating and supply mechanism are located either above or below the conveyor belts, instead of being located behind the machines.

It must be admitted that most available gang-type equipment is pretty crude when compared with some of the single-file machines. But it is logical to assume that development has been retarded because of the lack of gang-type capping and sealing machines as well as other packaging equipment with which it must function. However it is interesting to note that when labeling or cartoning speeds in excess of 100 per minute are demanded, the manufacturers of single-file equipment proceed to swing toward the gang principle and will provide machines that will handle two or more packages simultaneously even though not all operations on the machine are performed in this manner. A modern cartoning machine, though it will feed only one container at a time into the buckets, and will draw down only one carton from the magazine, will insert from three to six containers into the opened cartons.

The gang principle is not new by any means. It is simply getting a start in the packaging field. In manufacturing operations the gang principle is widely employed wherever it is necessary to obtain high speed production. Where would the candy industry be without gang-type depositors, enrobers, molding machines and cutters? Imagine depositing and enrobing chocolate covered creams one at a time in single file! Where would the price of an automobile be if holes in engine castings were drilled one at a time on a single-spindle drill press instead of fifteen or twenty on a multiple-spindle machine?

Speaking of multiple-spindle drill presses reminds us to remark that mechanically the drill press is not totally unlike a capping machine, so if one is possible and practical why not the other? Some cynic may remark, "How about feeding the caps automatically to twenty containers at once?" Our answer must be that we don't know how, but our familiarity with the progress made in automatic packaging equipment in the past few years is such that we'd hate to bet a year's salary that the thing's impossible. The evident snag is the cap hopper. It would indeed be something of a trick to keep twenty cap slides filled right-side-up from a single sorting hopper. But we'd like to point out that caps are shipped right-side-up in cases in gang formation from the cap makers and it might be possible for some genius to develop a way of feeding caps directly from the cases.

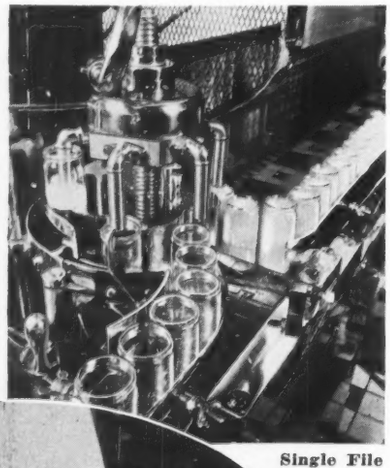
This may sound highly theoretical, but the thing has already been done in the packaging field in connection with filling collapsible tubes. At Bristol Myers, Ipana tooth paste tubes are received in specially designed chipboard boxes which are run through the filling machines, the tubes being filled directly from them. In this plant the gang principle is used, the tubes being filled three at a time. There are so many instances of gang feeding through the packaging industries that it may be ridiculous to say that caps may not some day be fed the same way.

In this connection the experience of another collapsible tube filler may be of interest. This outfit makes the most widely sold ointment in the world. Believing that a more accurate fill would be possible from a gang filler than from a single tube machine, this manufacturer adapted a candy depositor which fills eight tubes simultaneously. As a matter of fact the output of the machine is so great that it hasn't yet been possible to put the rest of the finishing operations into step with it.

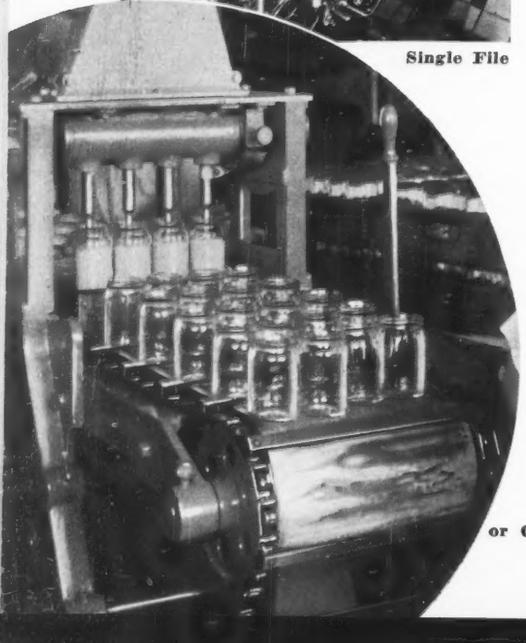
IN advocating a more general consideration of the gang principle as applied to packaging operations and equipment, we realize full well that there are a number of arguments against it, especially in connection with filling machines. The most important of these is the problem of keeping the several nozzles or filling stations supplied with material at uniform pressure. If gravity feed is utilized, then the matter is serious; it is serious also if the same type of supply mechanisms that are used for single-file machines are employed. Neither pumping nor gravity flow can be depended on entirely. In handling fluid and semi-fluid materials some means should be provided for maintaining uniform temperature and constant pressure. This does not seem to be a difficult engineering problem. Again referring to Bristol Myers, we wish to point out that, not only is the temperature and pressure maintained on the three feed nozzles of each filler, but every filler on the entire floor is controlled the same way, all being fed from central supply tanks. By controlling these variables inaccuracies are avoided, and the last tubes through the fillers at the end of the day are filled as neatly and as accurately as the first ones.

Another feature of the gang principle which appeals to us very strongly is the possibility of running several different sizes of containers simultaneously. This would be a difficult problem but probably not impossible if gang-type equipment was available for the entire line, since it would only mean adjustment of individual stations. Although difficult it does not seem impossible and it would be a challenging problem to work out.

FROM an engineering standpoint the gang principle appeals to us because very large output is possible with very slow movement of individual working parts. It appeals to us mechanically because a multiplicity of similar operations can be actuated from a single drive and a single shaft, thus minimizing the frequency of breakdowns.

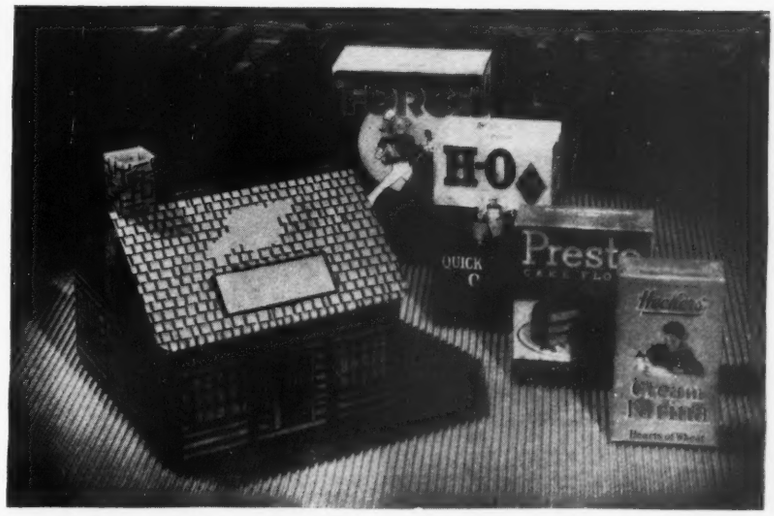


Single File



or Company Front?

PROMOTING *the Product . . .*



Hecker-H-O Co., Inc., has inaugurated a special-offer merchandising tie up with the radio program which features Force, H-O quick-cooking oats, Presto cake flour and Heckers' cream farina. These four products are packed inside a corrugated fiber H-Bar-O ranch house along with 26 colored cutouts of the radio characters. The combination, a 94-cent value, is sold retail for 59 cents. Hinde & Dauch Paper Co. made the carton.

▶ California Fruit Growers Exchange, Los Angeles, will use more than 253,000,000 magazine and newspaper ads this year to move its bumper lemon crop. In addition, outdoor posters, painted bulletins and car cards will reach a daily audience of 50,000,000.

▶ Southern Rice Industry, New Orleans, has put into action a gigantic three-year sales promotion campaign. Copy will appear in magazines and newspapers with a total circulation of more than 25,000,000. Cooking schools will be used, field men will help grocers capitalize upon the program and four books on how to use rice will be distributed.

▶ International Association of Ice Cream Manufacturers, Washington, D. C., has gotten up for use by member companies a series of newspaper ads, billboards, window posters, street-car cards and radio transcriptions. "Ice cream for increased energy" is the theme.

▶ California Brewing Association is conducting an outdoor advertising campaign with posters portraying a bathing beauty and carrying the statement that beer is not fattening.

▶ William Wrigley, Jr., Co., is promoting its chewing gum by a new musical series over a Columbia network on week-day evenings. It is a fifteen-minute broadcast.

▶ Oregon-Washington Pear Bureau has decided to enlarge its advertising and trade promotion program this year, what with an increased crop of winter pears. The objective is to open several new domestic markets.

▶ American Can Co. is publishing facts about the nutritive qualities of canned foods in practically all official publications going to doctors, dentists, dieticians, nurses and home economists.

▶ Borden Co., Inc., New York, will renew on June 5 over WOR its Wednesday-evening program, "The Puzzlers."

▶ Educator Biscuit Co., Cambridge, Mass., has started advertising three times daily over WOR, giving weather reports at noon, 4:30 and 11 p.m.

▶ Standard Brands, Inc., New York, has published a new edition of the Royal cook book, which first appeared in 1877.

▶ Newspaper cooking schools are attended by 3,000,000 women annually, according to C. H. Sundberg in a recent address to Chicago Federation of Advertising Agencies.

▶ Booth Fisheries Corp. now is presenting over a WABC-Columbia network on Thursday mornings a romantic serial, "Fish Tales."

▶ Pioneer Ice Cream Brands, Inc., New York, is conducting a newspaper campaign on Mel-O-Rol. Sales of this product have risen to 40 per cent of the company's total ice cream volume.

▶ Independent Grocers' Alliance, Chicago, has opened a coast-to-coast drive on its coffee. Special promotional material in the form of clown hats, masks and balloons have been furnished to retailers to be given away.

▶ Hills Bros. Co. is using full-page advertisements in color to promote its coffee in Chicago.

▶ Hatchet Club has been formed in Chicago to foster greater consumption of cherries throughout the country.

▶ Breyer Ice Cream Co., Long Island City, N. Y., is using Dixie cups with lids picturing movie stars. For a collection of these lids, children receive large colored photos of the characters, together with a cover in which to bind them.

▶ Seeman Bros., Inc., New York, is conducting a name contest for a tea beverage, offering $2,500 in prizes. The contest is backed up with a comprehensive tie-up in twenty metropolitan newspapers, dealer promotion, car cards, magazines and other media.

▶ National Broadcasting Co., Inc., New York, has published a review of the *Broadcast Merchandising* issues appearing between August, 1933, and January, 1935. It features new ideas in radio programs.

▶ Popsicle Service, Inc., New York, went on the air May 21 over WOR with a Tuesday and Thursday-evening drama, "Adventurers Club."

▶ John F. Jelke Co. is labeling its Good Luck whipped salad dressing and mayonnaise with the date up to which it may be sold.

▶ Kroger Grocery & Baking Co. has made its stores in central Ohio the exclusive distributing agencies for cut-rate tickets to a rodeo exhibiting in Columbus.

▶ National Organization of Sausage Manufacturers, Chicago, has been distributing human-interest stories about sausage products, tying these up with recipes to promote consumption.

▶ Cotton Seed Crushers Association of Georgia contemplates a campaign to educate the public to a greater use of cotton seed and cotton seed oil products.

Preventative Maintenance

Cuts Truck Repair Costs

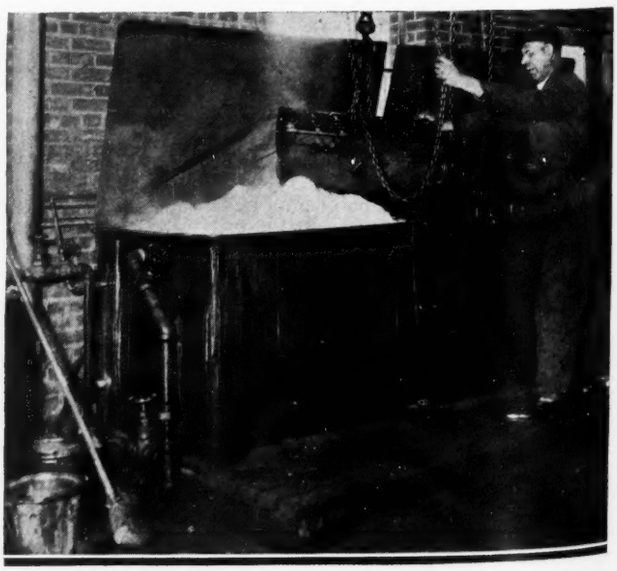
PREVENTATIVE maintenance; adequate shop facilities and modern labor-saving tools are almost equally important factors required to provide low-cost upkeep of large fleets in the food field. A good example of the application of these factors in the maintenance of a large bakery fleet is told in the accompanying text and illustrations of the shop and equipment of Dugan Brothers of New Jersey, Inc., Newark, N. J.

A view down the Dugan Brothers truck shop, showing the workbench directly next to the windows; the overhead crane extending down the entire length of the bench; the line-up of the trucks undergoing repairs and the power lubricator in the left center foreground.

Preventative maintenance may be briefly described as that procedure in which little jobs in truck repairs are done while they are still little jobs and before they grow into big ones. It may be explained also as spending six or seven 1-dollar bills at intervals as the need for small repairs is evidenced instead of one 10-dollar bill later on, perhaps as the result of a breakdown while the truck is out on its route. And experience has shown that this raio of 6 or 7 to 10 is about right as indicating the economy of preventative maintenance.

All adequate systems of preventative maintenance are based on some kind of daily inspection, for many things can happen to a truck in a day. This daily inspection may consist of a written report by the driver of his truck's condition, or of a cursory inspection of lights, horn, tires, cab and body by the garage attendant giving gasoline and oil on the truck's return from its route, or to a combination of both such forms of inspection.

Of course these daily inspections must be supplemented by more thorough inspections made by qualified



At the left, one of the portable electric floor lamps, convenient for under chassis work at night and for brake adjustment as shown. At the right, the $50 homemade cleaning tank which is in two equal parts of 250 gal., each, one to hold the cleaning solution and the other, the rinsing bath. It is heated by steam coil and the solution is agitated by compressed air.

Part of the fleet of bakery trucks operated by Dugan Brothers of New Jersey, Inc., lined up in the company garage in Newark, N. J.

mechanics at certain periodic intervals. Depending upon the class of truck and its work, these intervals may be based on time (days, weeks or months) or on mileage run.

Mileage run is the more generally accepted method, since all truck wear and the subsequent need for repairs is more nearly proportional to mileage than to any other factor. With the improvement in recent years of the means of lubrication, inspections which include chassis lubrication have been lengthened. Chassis lubrication periods of 1,000 miles or more are the rule rather than the exception.

Then there are still less frequent inspections such as at every 5,000 miles of operation for clutch, gearset and rear axle parts; motor air cleaners, oil filters, etc. Once the periods of inspection and what they include are set up, it is necessary to provide some system of paper work in order to make certain that the inspections are made at the proper times.

The follow-through on truck inspections is most commonly done as an office rather than as a shop function, since the recurrence of the inspection periods can be calculated most easily from the truck's operating records which are kept by clerks in an office usually separate from the shop proper. Some simple system must be provided, generally by truck number, for advising the shop foreman just when and on what trucks the different forms of inspection should be caried out. Also in this connection, some simple system of recording who made the inspections is necessary in order to check back in case a failure occurs which should have been prevented by the inspection if properly made.

WITH the procedure for the preventative maintenance inspections set up and backed by adequate record controls, the next step in low-cost truck repair expense is the provision for proper shop space with trained personnel and sufficient modern tool equipment. Shop layout has a lot to do with the cost of repair work.

The accompanying views show in part the layout of the Dugan Brothers shop and some of the labor-saving tool equipment with which it is fitted. The work bench, with spaces for individual mechanics, is directly next to the windows for the best possible light.

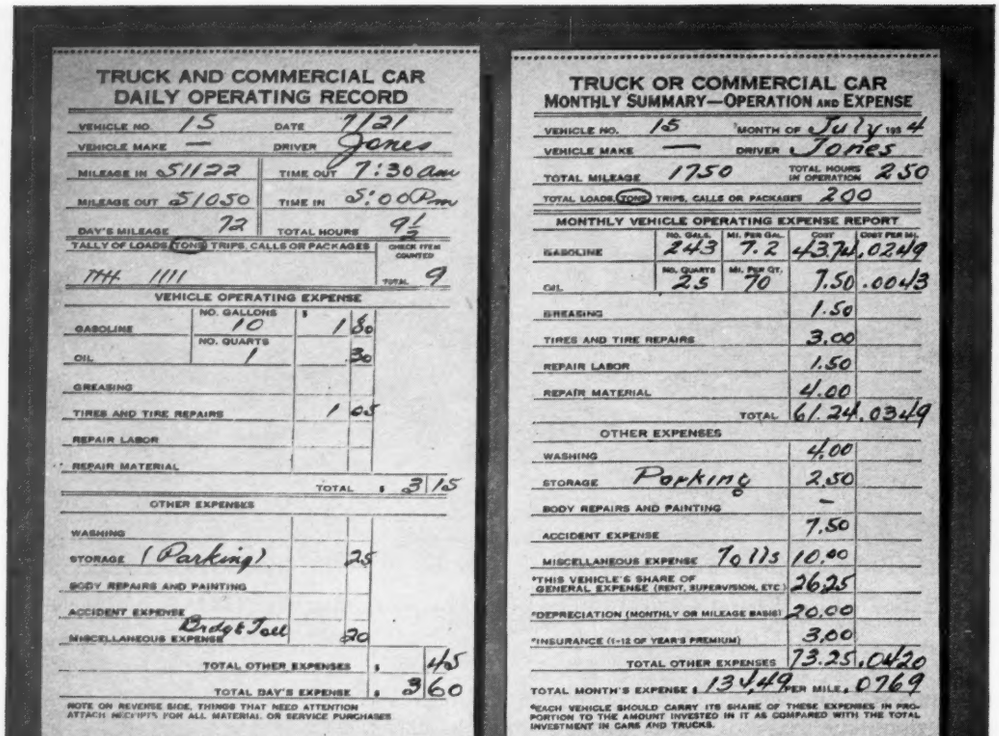
The trucks are lined up with their front ends toward the bench and a lengthwise aisle between the bench and the truck fronts. Overhead is a traveling crane for lifting engines or entire powerplants out of their chassis for transfer to individual motor stands after being cleaned in the special homemade tank shown in one of the other views.

Although not shown in the picture of the shop, the parts and stockroom is located at one end of the work bench and the cleaning tank at the other, thus segregating the work and yet minimizing lost motion of the mechanics in the progress of their work. In the stockroom, such small parts as nuts, bolts, washers, cotter pins, and the like are carried on pyramided revolving trays which make these small parts readily accessible to the mechanics.

A corner of the Dugan Brothers stockroom showing the bin arrangement and the stands with revolving shelf trays.

For work which has to be done at night as the result of the daily inspection, the portable electric floor light saves much time, especially when the work is under the chassis. Such lamps are also extremely convenient for adjusting brakes, as shown in one of the accompanying views.

The homemade washing tank shown in another of the illustrations has reduced the cost of cleaning motors and other chassis parts. It cost about $50 to build and consists of two parts, each with a 250-gal. capacity.



TRUCK AND COMMERCIAL CAR
DAILY OPERATING RECORD

VEHICLE NO. 15 DATE 7/21
VEHICLE MAKE — DRIVER Jones
MILEAGE IN 51122 TIME OUT 7:30 am
MILEAGE OUT 51050 TIME IN 5:00 Pm
DAY'S MILEAGE 72 TOTAL HOURS 9½
TALLY OF LOADS (TONS) TRIPS, CALLS OR PACKAGES — CHECK ITEM COUNTED
IIII IIII — TOTAL 9

VEHICLE OPERATING EXPENSE

	NO. GALLONS / NO. QUARTS	$
GASOLINE	10	1 80
OIL	1	30
GREASING		
TIRES AND TIRE REPAIRS		1 05
REPAIR LABOR		
REPAIR MATERIAL		
TOTAL		$ 3 15

OTHER EXPENSES

	$
WASHING	
STORAGE (Parking)	25
BODY REPAIRS AND PAINTING	
ACCIDENT EXPENSE	
MISCELLANEOUS EXPENSE Bridge Toll	20
TOTAL OTHER EXPENSES	$ 45
TOTAL DAY'S EXPENSE	$ 3 60

NOTE ON REVERSE SIDE, THINGS THAT NEED ATTENTION
ATTACH RECEIPTS FOR ALL MATERIAL OR SERVICE PURCHASES

TRUCK OR COMMERCIAL CAR
MONTHLY SUMMARY—OPERATION AND EXPENSE

VEHICLE NO. 15 MONTH OF July 1934
VEHICLE MAKE — DRIVER Jones
TOTAL MILEAGE 1750 TOTAL HOURS IN OPERATION 250
TOTAL LOADS (TONS) TRIPS, CALLS OR PACKAGES 200

MONTHLY VEHICLE OPERATING EXPENSE REPORT

	No. Gals. / No. Quarts	Mi. Per Gal. / Mi. Per Qt.	Cost	Cost Per Mi.
GASOLINE	243	7.2	43 74	.0249
OIL	25	70	7.50	.0043
GREASING			1.50	
TIRES AND TIRE REPAIRS			3.00	
REPAIR LABOR			1.50	
REPAIR MATERIAL			4.00	
TOTAL			61.24	.0349

OTHER EXPENSES

WASHING	4.00	
STORAGE Parking	2.50	
BODY REPAIRS AND PAINTING	—	
ACCIDENT EXPENSE	7.50	
MISCELLANEOUS EXPENSE Tolls	10.00	
*THIS VEHICLE'S SHARE OF GENERAL EXPENSE (RENT, SUPERVISION, ETC.)	26.25	
*DEPRECIATION (MONTHLY OR MILEAGE BASIS)	20.00	
*INSURANCE (1-12 OF YEAR'S PREMIUM)	3.00	
TOTAL OTHER EXPENSES	73.25	.0420
TOTAL MONTH'S EXPENSE $ 134.49	PER MILE	.0769

*EACH VEHICLE SHOULD CARRY ITS SHARE OF THESE EXPENSES IN PROPORTION TO THE AMOUNT INVESTED IN IT AS COMPARED WITH THE TOTAL INVESTMENT IN CARS AND TRUCKS.

The two sheets, the Daily Operating Record, on the left, and the Monthly Summary, on the right, comprise the simplified cost system as furnished gratis by the Chevrolet Motor Co. for owners of small fleets of trucks in the food field.

Simplified Cost System

for the Small Fleet Owner

DESIGNED especially for the fleet owner with a small number of trucks, the cost system forms illustrated herewith offer a means of recording the essential truck cost data of small fleets in the food field with a minimum of paper work. The system, which has been developed by the Chevrolet Motor Co., Detroit, Mich., may be had gratis from any local Chevrolet dealer or from the main office in Detroit.

The system consists of a small record book, one for each vehicle, containing a sheet for each day's record and a monthly summary sheet on which the daily entries are entered. A comparison of the summaries at the end of the month will give definite figures by means of which the relative operating costs of each vehicle in use can be compared.

The daily sheets are filled in by the driver. The monthly summaries may be totaled by the owner or his clerk to give the necessary résumé of expenses.

The daily sheet shows all of the essential data including the number of gallons of gasoline and its cost; the quarts of engine oil used and its cost; the cost of greasing, if any; tires and tire repairs, repair labor and parts and other miscellaneous expenses such as washing; storage; body repairs and painting and tolls or ferry charges.

The monthly summary sheet provides for totaling these charges with additional lines for depreciation; insurance; licenses and taxes and overhead charges. Provision is also made for the total mileage run which may be divided into the total expense to give the average cost per mile run for the month. Adding the summaries for twelve months will give the truck's yearly operating cost.

THE records thus obtained permit the owner to judge of the comparative merits of his drivers; show him the comparative costs as between makes and types of equipment; provide a guide for the use of a driver's bonus system; reveal which units should be replaced because of excessive operating expenses and if salesman-drivers are used, enable him to tell which men are operating most profitably.

Practical Problems of
TRUCK TRANSPORTATION

DISCUSSED BY EXECUTIVES IN THE FOOD INDUSTRIES

•

Do Tire Records Pay?

Question No. 10

1. Are individual tire records necessary to assure the lowest cost per tire-mile for truck tires?

2. If not, what other means can be taken to make certain that full value is obtained from truck tires?

3. If individual records are used, what accounting forms are required?

4. Is the cost of maintaining tire records offset by additional mileage secured by adjustment on tires which do not deliver expected mileage?

Dairy Believes in Records

IN ANSWER to your first question, we believe that individual tire records are necessary to insure the lowest cost per tire-mile for truck tires.

At the present we do not think or know of any other means to make certain that full value is obtained from truck tires. This, of course, refers to operations where many trucks are involved.

We use a tire change slip, a copy of which is reproduced herewith. One of these slips is made out each time a tire is changed. From this tire change record the information is transferred to our permanent tire card, a copy of which is also shown herewith. We find this a simple method of keeping track of our tire mileage.

We do not believe that there is any question but that the cost of maintaining our tire records is offset by the additional mileage secured through adjustments on tires which do not deliver the mileage that we think they should deliver. We find that when we show our tire suppliers the car record of each tire there is no question in regard to our claims.—RAY W. MORRELL, *Bowman Dairy Co., Chicago, Ill.*

Individual Tire Records Unnecessary

OUR answers to your questions are as follows:

1. Do not believe individual tire records are necessary to assure lowest cost per tire-mile for truck tires.

2. Tire and tire expenses are kept separately for each truck and these expenses divided by mileage enables us and our plant managers to determine the value being received from tires. Monthly costs per mile compared with those of other trucks or with cumulative tire costs for the life of the truck form a measuring stick.

3. We have an automobile and truck operating statement compiled monthly which we feel gives us sufficient information to enable us to have some control on operating costs of these vehicles.

4. We cannot answer this question definitely, as we do not maintain individual tire records. It seems to us that the plant manager or the party operating the vehicle is responsible to the point of knowing whether or not we are obtaining full value from tire purchases. The manager has access to the tire expenses as expressed in our answer to Question No. 2, and in our opinion think we are safe in saying that we are obtaining full mileage on all tires we buy. We may find defective casings now and then, but that is ordinarily adjusted to the satisfaction of all concerned.—A. E. HANSEN, *Libby, McNeill & Libby, Chicago, Ill.*

Don't Keep Tire Records

WE ARE, perhaps, in a little different position than most operators of motor trucks, in that our trucks are used mainly to move green fruit from orchards to railway sidings. For this purpose we use about 100 one-and-a-half-ton trucks, mostly Fords for quick delivery of fruit to cars.

Operating as our trucks do over soft ground on standard pneumatic tires for a very short harvesting period each year, we have not deemed it advisable to keep any kind of a tire record. It can readily be seen that each truck must operate under entirely different conditions and type of cultivated land, and that it would be almost impossible to establish a basis for the determination of mileage expectancy.—W. B. PLUMMER, *California Packing Corp., San Francisco, Calif.*

Some Records Hard to Get

I BELIEVE individual tire costs can be just as valuable as are individual truck costs, but unfortunately in but few instances has it been possible to secure the wholehearted cooperation of the garage service man, as it has been possible to get it from the chief garage mechanic. The best success is attained where very strict managerial supervision is given to this matter.—JOHN THIES, *manager accounting service department, Quality Bakers of America, New York, N. Y.*

Inflation Pressures Important

OUR ANSWERS to your questions in the order given are as follows:

Individual tire records are necessary to assure the lowest cost per tire-mile for truck tires, if the tires are to be left on one certain truck.

If individual tire records are not kept, one other means that can be taken to make certain that full value is obtained from truck tires is to make sure that correct air pressures are maintained at all times.

Next Month's Question

QUESTION NO. 11

Does It Pay to Reclaim Truck Engine Oil?

1. Under what conditions does it pay to reclaim or re-refine motor truck engine oil?

2. In a large truck fleet operated from several branch garages, is it more economical to reclaim such oil on a decentralized basis by the use of a small reclaiming outfit in each garage than to employ one large machine in the most centrally-located garage?

3. What, in your opinion, is the most satisfactory method to follow in relation to the principle of operation of the reclaiming machine?

4. In reclaiming truck engine oils, does it pay to go to the additional expense of lightening the color of the reclaimed oil if it is satisfactory in other respects as to specifications?

If individual records are kept, truck repair cards may be employed.

In our opinion, the cost of maintaining tire records is more than offset by the additional mileage secured by adjustment on tires which do not deliver their expected mileage.—ALEX JOHNSON, *supervisor of plant operations, Land O'Lakes Creameries, Inc., Minneapolis, Minn.*

Individual Records Essential

INDIVIDUAL tire records are essential in assuring the lowest cost per tire-mile. We know the exact mileage of each tire, including the spare on each truck, and the number of times a tire has been flat and the cause. Due to these records, the purchasing department has been able to purchase the most economical tires. Economical, because we can furnish them with the average cost per mile and also furnish them with the additional expense of changes due to flats. In some cases, the highest-priced tire reflects the lowest cost per tire-mile.

One should not overlook the fact that tire changes are expensive, as they slow up deliveries, change the good-natured attitude of the salesman to a sullen one, and lower tire mileage. Driving conditions also affect tire mileage, such as the type of pavement (as concrete, macadam or cobblestone), proper handling of truck by driver, and the condition of the truck. These are all reflected by individual tire records.

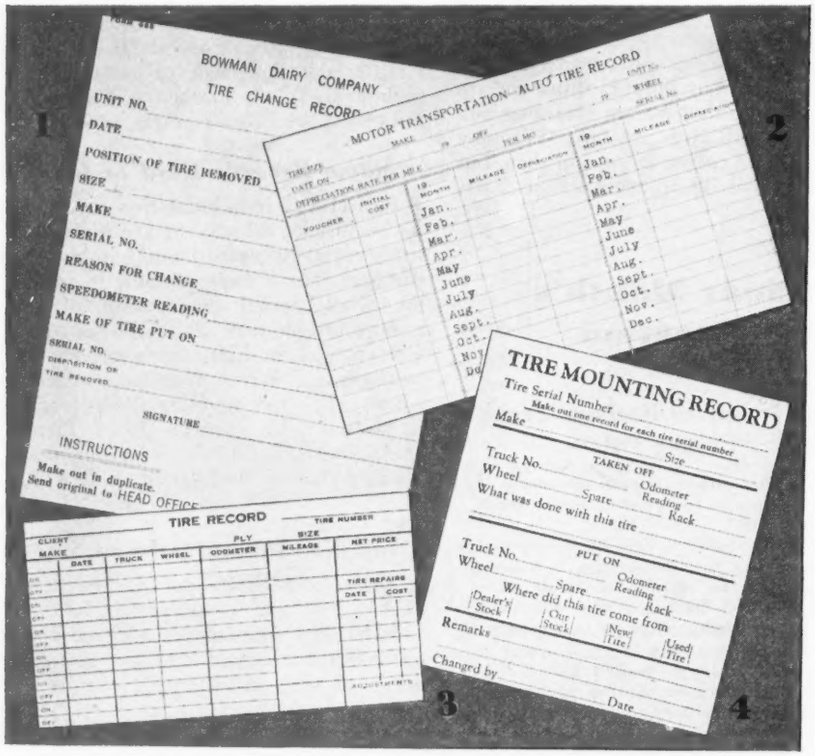
REALIZING the many and varied problems of motorized transportation which are constantly arising in the handling of all kinds of food products the editor will be glad to receive suggestions as to what are the particularly pressing problems that readers would like to have discussed in these pages.

It is also hoped that readers of these pages will note the publication of the question that is to be discussed next month, and add to the completeness and usefulness of the discussion by sending in answers from their own experience.

I know of no other means that can be taken to make certain that full value is obtained from truck tires.

Copies of our forms used in connection with the individual tire records are reproduced herewith. The tire mounting record is made out by the garage foreman in duplicate when any tire is taken from a truck or put on. The original is sent to the clerk, who transfers the information to the tire record. In the case of a new replacement, new record card is inserted and the old card checked out and filed for reference. Two mounting records must be filled out; one for the tire discarded and one for the new tire replacing it.

The cost of maintaining tire records is infinitesimal. Adjustments on tires which do not deliver the expected mileage are rarely allowed at the present time, therefore the need for individual tire records is in economical purchasing.—WALTER C. BRICK, JR., *Parkway Baking Co., Philadelphia, Pa., and Camden, N. J.*



Forms marked 1 and 2 are used by the Bowman Dairy Co., Chicago, to keep an individual record on each of its truck tires. Forms marked 3 and 4 are somewhat similar records used by the Parkway Baking Co. The system in each instance makes use of an individual tire record card for the life of the tire and a tire change form to record tire removals and replacements.

Records Not Necessary

WE HAVE NEVER kept any tire records—never thought it was necessary. We maintain a tire repair department, and when it is possible for us to repair our tires we do so.

Our fleet of trucks covers Toledo and within a radius of 150 miles. After tires get slightly worn on the trucks that operate out of town, we take them off and replace them with new tires. The old ones are put on the trucks that operate in the city, where if they have a flat, they can be easily reached to be serviced.

We do, however, know about what mileage we get; but as to adjustments, if a tire shows defects the local firm that we have been doing business with takes care of us in that respect.—S. P. EPLER, *The Page Dairy Co., Toledo, Ohio.*

Records Very Helpful

AS WE ARE only interested in light equipment, such as coupes and sedan delivery cars, we do not have the tire problem that confronts people who operate heavy trucks. Our tire mileage is exceptionally good, but we do keep a record of what tires are furnished to a car so that if a man is not getting what we believe to be full mileage, we can find out why. Usually it is not the fault of the tires.

If, however, we were operating heavy trucks with big tires which cost a lot of money, we certainly would keep a close and accurate record of the same.

The average fleet of trucks of this type is not so large but what the record could very easily be kept with a minimum of bookkeeping work.—C. L. JONES, *automobile division, General Foods Sales Co., Inc., New York, N. Y.*

Uses Index Record System

IN OUR opinion, individual tire records are necessary to assure the lowest cost per tire-mile for truck tires. Such records can be kept most conveniently by an index card system comprising a total mileage record card for each tire and a tire change record card made out each time a tire is renewed or replaced. Speedometer or odometer reading is recorded on the latter form each time a tire change is made.

We believe that the cost of keeping such records is more than offset by the additional mileage secured by adjustment on tires which do not deliver their expected mileage.—P. S. ROBINSON, *manager, Challenge Cream & Butter Association, Los Angeles, Calif.*

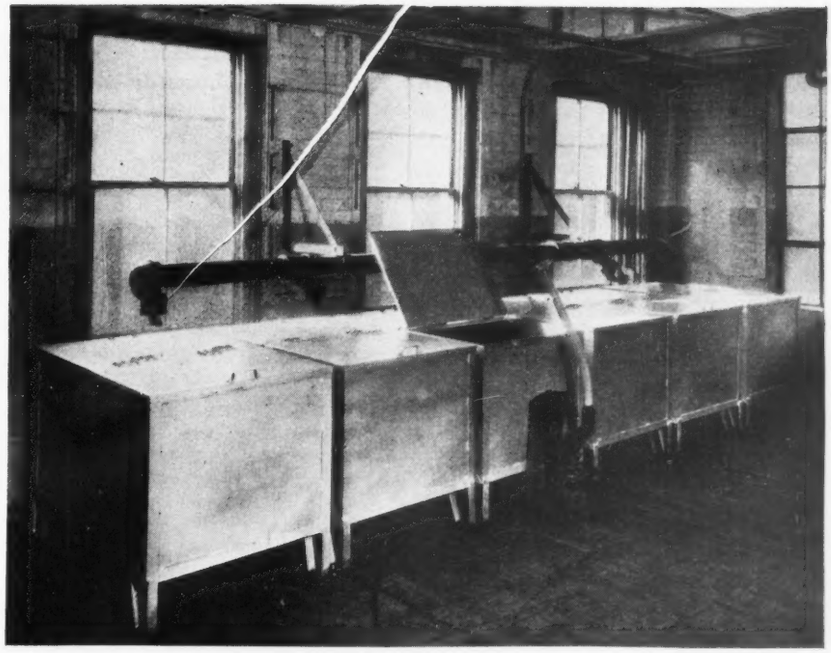
IDEAS
from Practical Men

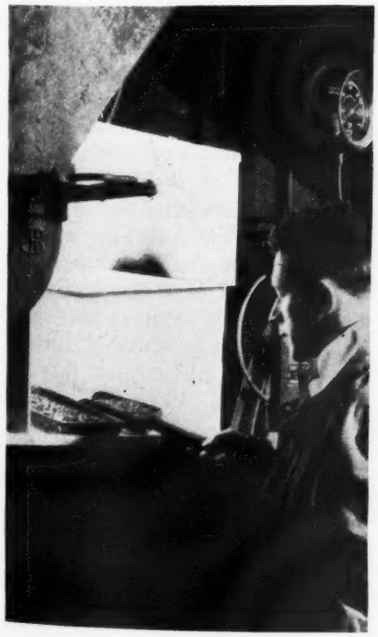
Matching Colors with White Light

MANY processors of foods are dependent on color to determine grade or quality, or to control processing. This is often difficult, because the ordinary electric light is yellow and changes colors under observation. Even daylight conditions vary from hour to hour and are not entirely dependable.

Schwabacher Bros. & Co., Seattle, Wash., have met this difficulty by using a recently developed light called "North Daylight," an invention of David Roderick of Seattle with refinements made by Dr. Thomas J. Killian, research director of the manufacturer, the Luminous Tube Lighting Co. This is a white light, and is used by Schwabacher Bros. in the roasting of coffee.

As shown in the illustration, the white tube light is arranged in a reflector directly above the roasters, so that inspection is easy and the color observed never varies because of the light. In this way the correct brown shade for the roasted coffee is matched to a sample and the roasts are always the same. Another advantage of this light, which is also used for grading cereals, is that it casts no shadows, thus aiding close and exact observation.—M. E. BRIDSTON, *Seattle, Wash.*





Handling Batch Liquids

THE illustration shows a group of tanks for corn syrup in the candy factory of James O. Welsh Candy Co., Cambridge, Mass. The method used for handling these batches of syrup is an adaption to plant conditions which may prove as successful for other manufacturers as it has for this plant.

It will be seen that the tanks have feet so that they can be moved from place to place as wanted by means of jack-lift trucks. There are molasses gate valves in the bottom of each tank so that they may be drained by gravity flow. The covers are in two pieces, hinged in the middle, so that access may be had to the tanks from either side.

The syrup is pumped up from a storage tank below. As shown in the photograph, the delivery header has five outlets, each closed by a gate valve. These are properly spaced so that five tanks may be filled at one time. There is room under this header for placing six tanks.

The necessity for developing this method of handling syrup arose from the fact that there was no room in the plant for an overhead location of the syrup storage tank from which the liquid could be fed to process by gravity. The method used conserves space and still permits the syrup to be moved in units of any quantity desired.—FRANCIS A. WESTBROOK, *Center Conway, N. H.*

Preventing Hose Leakage

LEAKAGE of steam and water from clean-up hose connections is a common sight in many food plants. This condition is wasteful, messy, and creates the hazard of slipping on wet floors.

Eliminating this nuisance is primarily a question of valve installation, operation, and maintenance. Globe valves should always be used in preference to gate valves for this service. Throttling of steam and water soon ruins a gate valve. The usual globe valve will give good service over a long period of time on cold water lines but, if used on steam

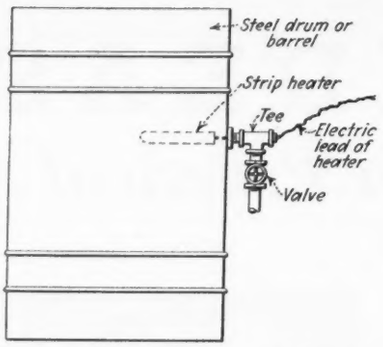
clean-up lines, requires special attention.

There are two methods of installing globe valves. The first, with the pressure under the seat, is most widely used and usually designated by the manufacturer by an arrow on the body of the valve. Among the advantages of this method are that the line pressure is off the packing when the valve is closed, and danger of shutting off the line should the seat come loose from the stem is eliminated. When installed on clean-up lines, the tendency of the disk to come away from the seat, caused by unequal contraction of the stem and the body of the valve as the valve cools, is a distinct disadvantage. Where valves are installed with pressure under the seat, it is always advisable after closing the valve to go back and tighten it further when the line is cold. Unless this is done, the seat or disk will steam cut and leak.

The second method of installing globe valves is with the pressure on top of the seat and disk, and is much to be preferred for clean-up service. Differences in contraction of the valve parts will not loosen the disk, as the pressure will hold it to the seat and leakage will be minimized. Should the packing leak, it can always be tightened or renewed at much less cost than the expense of renewing seats and disks.—S. H. COLEMAN, *Waynesboro, Va.*

Emptying Solid Fat Drums

COCOA BUTTER is delivered at our plant in steel barrels. To facilitate its handling, as it is very hard at room temperatures in winter time, a 250 watt immersion type strip heater is inserted in the run of a Tee



Method of attaching strip heater to soften contents of fat drum.

fitted to the bung opening of the barrel, as shown in the accompanying sketch.

This heater attains a maximum temperature of 110 deg. F. with a current input of 250 watts at 110 volts. Its use keeps the cocoa butter around 90 deg. F., considerably above the melting point of 78 deg. F. The fat is thus withdrawn with ease and cleanliness through a valve attached to the side outlet of the Tee, and the time-consuming and messy process of chopping out the solid fat from an opened barrel is avoided.—RAY B. WOLF, *San Francisco, Calif.*

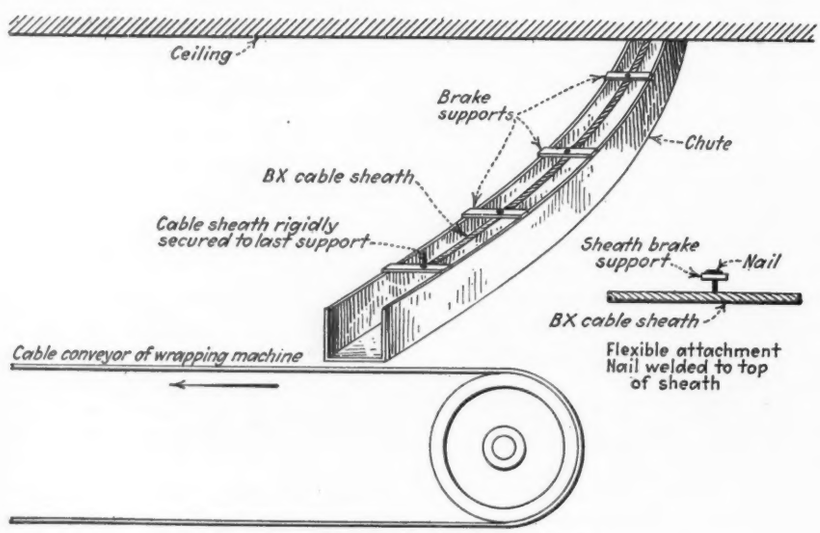
Brake for Box Chute

WHERE paper boxes are filled on one floor and delivered by chute to a wrapping and sealing machine on the floor below, two difficulties, among others, may be encountered. First, the boxes may not be delivered to the chute at evenly spaced intervals, resulting in a bunching at the wrapping machine. Second, the boxes may be delivered by the chute at unequal speeds, some too fast, some too slow, depending on the number of boxes coming down the chute at any one time.

To overcome the first of these difficulties, an operator is usually stationed at the points where the chute delivers to the belt of the wrapping machine. It is her duty to keep the feed of boxes at an even rate. This is done by moving boxes off the belt onto an adjacent table when the chute delivers at too high a rate, and filling in gaps in the line from the table when the chute does not deliver boxes fast enough.

To meet the second difficulty, one plant employs a retarding device on the chute, thus slowing up the delivery of packages and allowing the operator time to guide them onto either belt or table as desired. As shown in the accompanying sketch, this retarder is made of empty BX cable sheathing $\frac{3}{4}$ in. in diameter fastened to $\frac{3}{4}$x$\frac{1}{8}$ in. iron strips welded across the top flanges of the lower end of the chute. At each end of its length the BX sheathing is rigidly fastened to the support. The attachment to other supports permits the sheathing to move up or down. This is done by means of an ordinary nail. The nail passes through a hole at the mid-point of the iron support, its head preventing the sheath from falling too low, and its point welded to the sheathing.

Nail lengths are selected so that the sheathing rests lightly on top of the boxes, acting to brake or retard their passage.



Brake for chute to wrapping department.

Utility Waste Basket

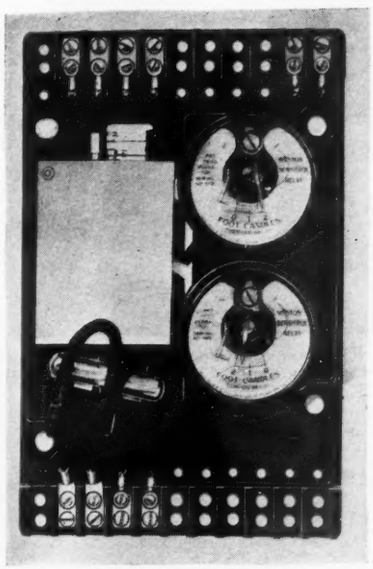
IN ONE factory where wooden barrels are used as waste baskets, the paper and rubbish were disposed of by dumping the barrels on the floor in front of the incinerator and then shoveling the material into the furnace.

This method of disposal required considerable work and in order to make a saving the following method has been developed: Wire containers were constructed of a size to just fit inside the barrels, and at the same time of dimensions suitable for inserting into the incinerator through the furnace door. When one of these wire baskets is filled, it is placed in the furnace and held there until the rubbish is all consumed. It is then returned to the barrel.

In this way the waste material is disposed of with little trouble and the good appearance of the plant is maintained.—N. T. PEF, *Chicago, Ill.*

NEW EQUIPMENT

for Food Manufacturers

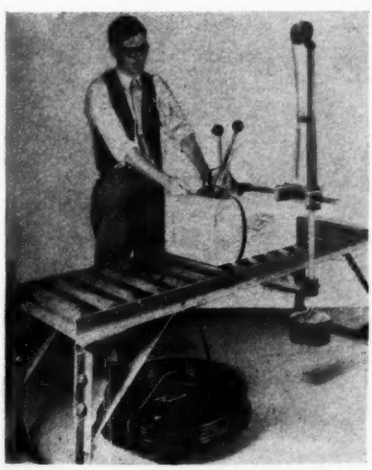


Lighting control.

Lighting Control

PHOTRONIC cell control which turns lights on and off automatically to maintain a predetermined level of adequate illumination has been announced by the Weston Electrical Instrument Company, Newark, N. J. The desired turn-on and turn-off illumination values are set in advance on two independent scales and at these values the cell actuates a relay controlling the lighting circuit through a mercury switch.

This control, which is called the model 709, has been designed particularly for use in factory lighting. In addition to maintaining the illumination in the plant at the desired level for good working conditions, the use of this control is said to effect economy by preventing the waste of electricity when lights are not needed. When the control is to be used for outdoor work the housing is made weatherproof to protect the operating parts.



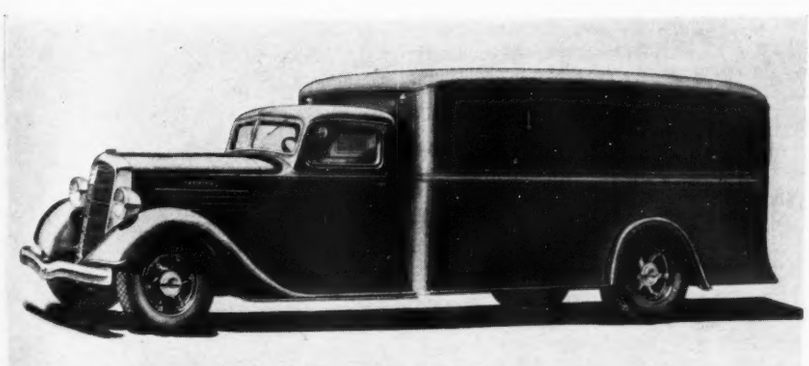
Steel Strap Retainer.

Federal Trucks

BETTER load distribution and increased capacity are features claimed for the new 15, 18, 20 and 25 Silver Anniversary models recently brought out by Federal Motor Truck Co., Detroit, Mich. Modern styling is evident throughout in these models.

Two types of cabs are available. The standard cab has a one-piece, sloping windshield. The de luxe cab has a V-type sloping windshield, insulated steel roof and is lined with plywood.

Better load distribution has been obtained by moving the power plant and dash forward. This provides a shorter turning radius, shorter overall length, and better distribution of load between front and rear tires.



New Federal truck with panel body.

The following wheelbases are available: models 15 and 18—13(in., 156 in., and 168 in.; model 20—136 in., 147 in., 156 in., 168 in., and 181 in.; model 25—136 in., 147 in., 156 in., 168 in., 181 in., and 195 in.

Gross capacities are: model 15—11,000 lb., model 18—12,000 lb., model 20—13,000 lb., and model 25—14,500 lb. Nominal ratings are: model 15—1½ to 2 tons, model 18—2 to 2½ tons, model 20—2 to 3 tons, and model 25—2½ to 3½ tons. The engine is the Hercules six-cylinder truck engine.

Strap Retainer

FOR shipping departments using steel straps to reinforce boxes or other containers, Acme Steel Co., 2840 Archer Ave., Chicago, Ill., announced a steel strap retainer adapted for use with conveyor systems or wrapping tables, where space does not permit the placing of any other type of equipment. As shown in the illustration, the coil of steel strap lies in a horizontal position in a steel pan. Casters are provided to make possible easy movement of this retainer from place to place. The device is 24½ in. in diameter and 9½ in. high.

Filter Material

A CORRISION resistant filter material, called "Fabricated Filter Carbon" has recently been announced by National Carbon Co., Inc., Cleveland, Ohio. It is available in a variety of forms such as plates, pipe, and blind-end tubes and can be produced in special shapes for specific filter designs.

The new material is said to be unaffected by all acids, alkalis and corrosions except hot, concentrated solutions of a highly oxidizing character. For this reason it is recommended by the maker for the filtration of liquids which might be contaminated by other filtering materials. The material is light in weight, mechanically strong, resistant to thermal shock, easily machined and cleaned. It is produced in several different degrees of porosity.

Arc Welder

A LOW current arc welder for lighter gage metals is announced by Harnischfeger Corp., Milwaukee, Wis. Known as the "W50-254," this welder has a stable, high-speed arc, enabling it to weld quickly and efficiently down to 26-gage steels. It has a motor-generator unit, with a 3-hp. squirrel cage

motor, and can be operated by any alternating current, including 110-volt single phase. Floor space required is about 2 sq.ft. The welder comes with base for permanent mounting, or with wheels or lifting bail for easy portability.

Rubber Pump

For handling acid and corrosive liquids, American Hard Rubber Co., 11 Mercer St., New York, N. Y., have brought out a new centrifugal pump for capacities up to 90 gal. per minute at 12 ft. head.

The casing of this pump is made of acid-resisting hard rubber and is also heat and distortion resisting. It is mounted to the base by means of an acid-resisting hard rubber covered casting which acts as a chamber to catch drip from the stuffing box. By-pass is adjustable and cored into back casing. The motor shaft is extended, tapered and pinned into the pump shaft, with all parts interchangeable.

Angle Tools

Tools for use in the "hard-to-get-at" corners of the plant are now provided by C. A. Koza Co., Rochester, N. Y. These tools are primarily for plant maintenance work, and can be driven by air or electric drills, direct or through a flexible shaft. They come in three sizes. Attachments are provided for drilling, grinding, slotting, reaming, burring, tapping, milling, boring, filing, sawing, countersinking, counterboring and keywaying.

Control Instruments

Two new control instruments have recently been announced by the Bristol Company, Waterbury, Conn. One of these is a pyrometer controller, model 478, which is made to possess "degree-splitting" characteristics that permit a close check over any heating processes.

The second instrument is a direct-reading absolute pressure gage of the recording type for vacuum. It is compensated for changes in barometric pressure and also for changes in temperature, and consequently reads direct in absolute pressure. It is equipped with two measuring elements which are coordinated through a special differential transmission linkage. One of these elements is connected to the vacuum line and the other functions in connection with the compensating features of the recorder. The range is as low as 25 mm. of mercury absolute pressure or its equivalent. This recorder is available in a rectangular wall or flush case.

Bread Slicer

A production bread slicer for high speed operation is the 16 in. gravity speed type that has been recently placed on the market by Oliver Machinery Co., Grand Rapids, Mich. In this new design the cutting knives are operated at higher speed and the motor has been made more powerful in order to speed up operations. A 48-in. chute is provided with the machine designed to feed the loaves to the knives by gravity at the new higher speed. Fences on infeed and outfeed tables have been redesigned to allow several loaves to be held on the outfeed table at one time so that there is always one waiting for the off-bearer. The backstop on the outfeed table has been made removable in order that the loaf may go straight onto the intake conveyor of the wrapping machine if so desired. The rear table swings down to give access to the motor and to the interior parts of the machine.

Speed Reducer

Helical gear reduction units in sizes from $\frac{1}{8}$ to 2 hp., have recently been announced by Ajax Flexible Coupling Co., Westfield, N. Y. These new units are called "Lectrigear" and are designed for the direct attachment of standard footless motors, which may be attached without any change in the shaft or bearings. The reducers are furnished either with or without motors as desired and are so designed that it is unnecessary to use any particular make of motor, standard makes being used without change.

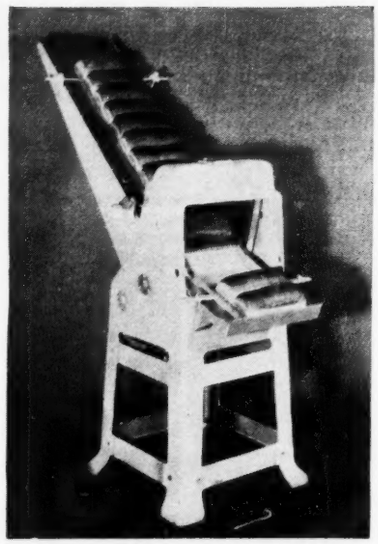
Electric Vibrating Screen

The Paterson Engineering Co., 420 Sansom St., Philadelphia, Pa., are now offering a duplex electric vibrating screen for use with liquids or dry products. This screen is designed for single or double screening at one time and it is claimed by the maker that it is the only screen which has no holes in the wire-cloth sieve. The cloth is held in place by a sieve lockring which keeps it tightly in the seamless steel basket. This lockring is held in place by a single wingnut which enables it to be easily removed or replaced. For this reason, it is possible to use an inexpensive cheesecloth sieve in place of wire sieves where that is desired, the cheesecloth being thrown away without taking time for cleaning. The machine is portable, weighs 75 lb. and is 32 in. high. A 1/6 hp. motor drives it from any light socket.

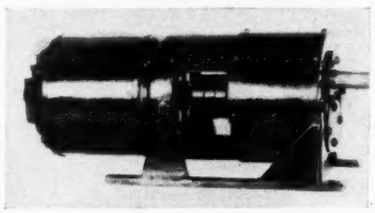
Hydraulic Lift Trucks

New models of its hand lift trucks for factory and warehouse use have been brought out by Lyon Iron Works, Greene, N. Y. There are now three standard capacities of this truck available—3,500 lb., 5,000 lb. and 6,000 lb. The frame is now of angle iron, giving greater rigidity and wider bearing for the skid platforms. Timken bearings are used in the front wheels to take the side thrust when turning.

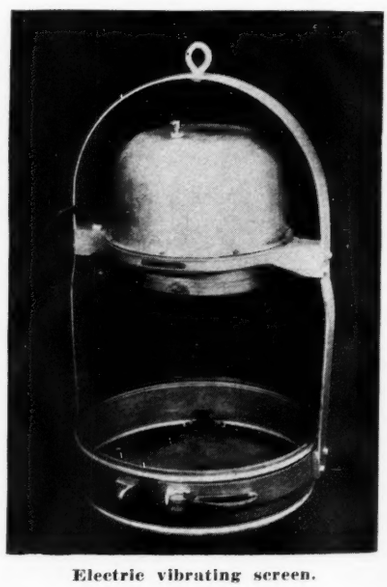
This truck has a hydraulic lift mechanism which in the new models is provided with a leakproof air vent so that the truck may be turned over, as when greasing the wheels, without loss of oil.



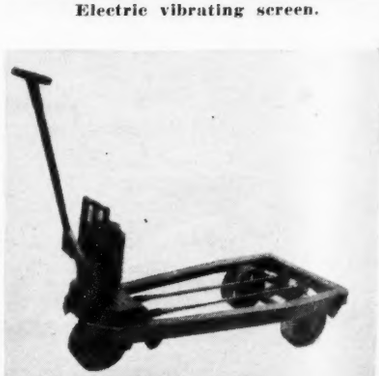
High-speed gravity-feed bread slicer.



Helical gear speed reducer.



Electric vibrating screen.



Hydraulic lift truck.

The Manufacturers Offer . . .

Fire Pumps — Improvements in industrial plant fire pumps, made by Worthington Pump and Machinery Corp., Harrison, N. J., are the subject of bulletin W-320-B1.

pH Tester—The Wulff pH tester for use in determining the pH value of highly colored, turbid, viscous, semi-solid material is discussed in a folder issued by Pfaltz & Bauer, Inc., 300 Pearl St., New York.

Refrigerant—The R. & H. Chemicals Dept. of E. I. duPont de Nemours & Co., Inc., Wilmington, Del., has issued the first copy of a new bulletin entitled "Artic Service News," which is to be published periodically and which deals with the use of methyl chloride refrigerants.

Milk Cooler—A stainless steel milk cooler and heater called the "Compact," (which may also be made of Inconel) is described by Mojonnier Bros. Co., 4601 W. Ohio St., Chicago, Ill., in Bulletin No. 68.

Food Plant Equipment—Nickel and Monel Metal as the materials for fabricating all types of food processing equipment, are illustrated and discussed in a new booklet issued by International Nickel Co., 67 Wall St., New York, N. Y., and entitled "Illustrated Guide for Equipping Food Plants."

Beer Pasteurizing—Equipment for pasteurizing canned and bottled beer is the subject of bulletin FP-35-4, issued by Foster Wheeler Corp., 165 Broadway, N. Y.

Floor Cement—For patching broken cement floors a permanent repair material called "Cleve-O-Cement" is the subject of a folder issued by the Midland Paint & Varnish Co., Cleveland, Ohio.

Mixers—Type E mixers with various types of drives and agitators are described by Patterson Foundry & Machine Co., East Liverpool, Ohio, in a recent illustrated bulletin.

Paint—A catalog, illustrated with photographs of industrial and other applications of paints and entitled "Guide to Profit Through Paint" has been issued by Sherwin-Williams Co., Cleveland, Ohio.

Thermometers—Indicating thermometers for industrial use, of the dial type, are described and specified in Bulletin No. 600, H. B. Instrument Co., 2518 N. Broad St., Philadelphia, Pa.

Electrical Maintenance — Hints for the proper maintenance and operation of electrical machinery with particular reference to brushes, commutators and slip-rings are contained in a 64-page booklet entitled "The Brush Phase of Motor Maintenance" issued by the Ohio Carbon Co., Cleveland, Ohio.

Air Conditioning—Equipment for cooling and air conditioning installation in food plants and other industrial units is the subject of Bulletin 2967, a recent release of Buffalo Forge Co., Buffalo, N. Y.

Meat Packing Machinery — Catalog No. A-46, issued by the Cincinnati Butchers Supply Corp., Cincinnati, Ohio, is a new catalog of this company's complete "Boss" line of machinery and equipment for all branches of the meat packing industry and contains 200 pages, is bound in Fabrikoid-covered board and is profusely illustrated.

Rat Poison—Murdirat, a poison used for rodent control in industrial plants, forms the subject of a folder issued by Murdirco, Inc., 1040 S. Olive St., Los Angeles, Calif.

Preservatives—A new leaflet published by Seydel Chemical Co., Jersey City, N. J., describes benzoate of soda and its use as a preservative of food products.

Control Instruments—Savings that can be effected by the use of instruments for measuring temperature, flow, pressure, liquid level, and other quantities in the processing plant are discussed in a folder published by the Brown Instrument Co., Philadelphia, Pa.

Refrigerated Cars—For the safe transportation of perishable food products, a new bulletin issued by Safety Refrigeration, Inc., 230 Park Ave., New York City, describes the use of silica gel apparatus in safety automatic iceless refrigerator freight cars.

Fire Extinguishers — A hand fire extinguisher of the carbon dioxide type, called the "Lux, Model 2 Extinguisher" is discussed in a folder by Walter Kidde & Co., Inc., Bloomfield, N. J.

Insulation—Cork covering for all cold pipelines is thoroughly treated in Catalog A.I.A. File No. 37-B-6, distributed by Armstrong Cork Products Co., Lancaster, Pa.

Flowmeters—The Elgin Isometer, an instrument for measuring the flow of fluids in pipelines is described by Elgin Softener Corp., Elgin, Ill., in a new catalog.

Bakery Equipment — Three bulletins describe the high speed bread wrapping machine, the Junior bread wrapping machine and the bread-slicing machine made by National Bread Wrapping Machine Co., Springfield, Mass., and sold by Baker Perkins Co., Saginaw, Mich.

Alloy Valves—For service where resistance to corrosion is desired, the Lunkenheimer Co., Cincinnati, Ohio, describes in a new bulletin alloy metal gate valves made of "Causul."

Water Stills—For laboratory and factory service, automatic water stills are discussed in a folder recently published by Barnstead Still & Sterilizer Co., Inc., 2 Lanesville Terrace, Forest Hills, Boston, Mass.

Conveyors—A general catalog of conveying equipment illustrated with many pictures of industrial applications is published by the Lamson Co., Syracuse, N. Y., under the title "Consider Before You Buy Conveyors."

Gasoline Crane—"Krane Kar," a gasoline driven locomotive crane of small size for yard and factory service, coming in 2½ and 6 ton models, is described in Bulletin No. 45, by Silent Hoist, Winch & Crane Co., 762 Henry St., Brooklyn, N. Y.

Bakery Machines—In an illustrated folder published by Read Machinery Co., York, Pa., the full line of bakery equipment made by this concern is pictured and described.

Steel Equipment—New types of production equipment made from steel by rolling, welding and other fabricating processes are illustrated in a new bulletin, issued by Lukens Steel Co., Coatesville, Pa.

Lubrication — Three bulletins issued by Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago, Ill., deal with "The Lubrication Engineer—His Value to You," "The Lubrication of Diesel Air Compressors," and "Diesel Engine Bearing Lubrication."

Maple Syrup — Concentrated maple syrup (2½ fold) of the Citadel brand, called Canada Strong, is described by the Flavor Service Division of the Quebec Producers of Maple Sugar, 5 Avenue Begin, Levis, Quebec, Canada, in a 22-page booklet.

Collapsible Tubes—Bulletin No. 34-H issued by F. J. Stokes Machine Co., Tabor Road, Olney P.O., Philadelphia, Pa., describes the "Westite" closure for collapsible tubes.

Containers—Metal or fiber drums and pails of new design, manufactured by Industrial Container Corp., Old Colony Bldg., Chicago, Ill., are discussed in a recent folder.

Stokers—Two new bulletins entitled "The Heating Plant Pays a Profit" and "Steam Costs Go Down," Nos. 1458 and 1459, have been issued by Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

Equipment Cleaning—Means for cleaning food plant equipment by the use of "Turco" are discussed in a bulletin recently issued by Turco Products, Inc., 6135 S. Central Ave., Los Angeles, Calif.

Transparent Wrappings—Vision, Vol. 1, No. 1 of a new publication to be issued periodically by Shellmar Products Co., Mt. Vernon, Ohio, deals with the use of transparent wrappings in packaging and display work.

Pouring Pail—The Benetco Swivel Spout "Por Pail," a device for use with metal containers which permit easy pouring, is described in a folder recently issued by Wilson & Bennett Mfg. Co., 6532 S. Menard Ave., Chicago, Ill.

Valves—Three new folders describing iron-bodied globe valves, bronze gate valves and "Twin-Bolt" gate valves, have been issued by Jenkins Bros., 80 White St., New York, N. Y.

Diesel Engines—Vertical four-cycle direct injection Types B, C, D, and E diesel engines, made by Worthington Pump & Machinery Corp., Harrison, N. J., are the subject of Bulletin F-500-B6G.

Dairy Equipment—The "Lo-Vat" pasteurizer featuring the "Thermo Drum," is described by the Pfaudler Co., Rochester, N. Y., in Catalog No. 760.

Chain Drives — Silent chain drives for industrial equipment are described, specified and pictured in a new 30-page catalog, No. 1425, published by Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

Strip Steel—Hot and cold rolled strip steel for the fabrication of various equipment parts and for packaging and similar uses, is the subject of a new bulletin issued by Acme Steel Co., 2840 Archer Ave., Chicago, Ill.

BUSINESS TRENDS

Sugar Use Still Increases

REPORTS by Lamborn & Co., for the first four months of 1935, show sugar distributed in the United States equal to 1,928,920 long tons, raw sugar value. This compares to 1,698,263 long tons in 1934, an increase of 13.5 per cent for the period.

While sugar distribution in 1935 has held steadily above 1934, with the first quarter showing a 4 per cent increase, the magnitude of the increase in April, about 180,000 long tons, is unusual.

Milk Production Off

IN 1934 the total of milk produced was 3 per cent below the 1933 output, and was the lowest since 1929. This trend continues and, on April 1, the Bureau of Agricultural Economics reported milk production 4 per cent below the previous year.

This reduction is caused by several factors. The number of milk cows on farms is reported by the same bureau to be about 4 per cent below the number of the preceding year. Also, while the condition of pasturage, at 73.7 per cent of normal, on April 1, is above last year, it is below the average for the time of year.

The most important cause of low milk production, however, is to be found in the low production per cow. In 1934, this was 4,030 lb., compared to 4,178 lb. in 1933 and 4,582 lb. in 1929. In April, production per cow was slightly below the 1934 figure. As this output is well below what can be obtained with proper herd selection and feeding, production can easily be increased whenever the return on raw milk becomes high enough to encourage the dairy farmers.

More Crop Plantings

IN ADDITION to the prospective acreages of canning crops already listed in these pages, figures are now available for kraut and lima beans. A substantial decrease is expected in the planting of cabbage for kraut packing, with only about 63 per cent of the 1934 contract acreage contemplated. Present prospects are for 10,130 acres in 1935, compared to 12,630 in 1934.

Green lima bean acreage for canners is indicated at 12.7 per cent above 1934, with a total of 28,210 acres for 1935, compared to 25,040 acres last year, and an all-time peak of 33,780 acres in 1930.

Construction News

	Pending (thousands)	Awarded May (thousands)	Total Awarded 1935 (thousands)
Bakery	$153	....	$135
Beverages	441	$674	2,942
Canning and Preserving	163	84	643
Confectionery	...	28	28
Grain Mill Products	635	250	528
Ice, Manufactured	40	28	234
Meats and Meat Products	....	28	328
Milk Products	770	197	829
Miscellaneous	815	318	1,260
Total	$3,017	$1,607	$6,927

Lower Farm Income Prospects

LAST YEAR'S agricultural activity, unhappily aided by the drought, borrowed its cash income from the first half of this year. Therefore, in spite of the rapidly mounting retail prices of foods, the cash income of the farmer from crop marketings is much below last year; and this deficit is not offset by the slightly greater cash return being received for the limited quantity of animal products being sold. Rental and benefit payments in the first half of 1935 will be between $300 and $350 million in contrast with last year's payments of $149 million for January to June inclusive.

Bread Consumption Declines

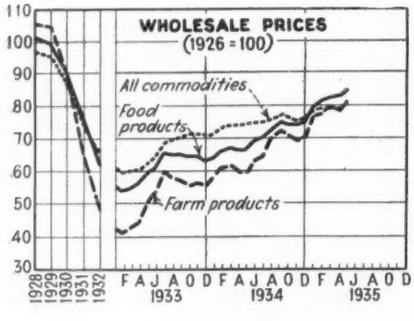
IT IS estimated in the baking industry that the first quarter of 1935 will show bread consumption between 5 and 10 per cent lower than for the same period of 1934, which in turn was smaller than the consumption in the corresponding period of 1933.

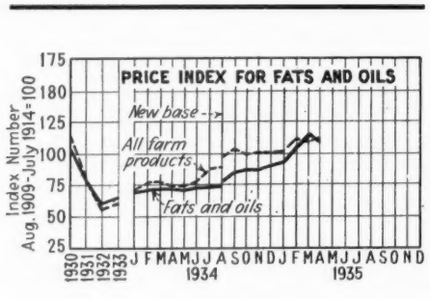
In baking circles this decline is attributed to the steady increase in the cost of living. High meat prices, in particular, are blamed, as meat purchases now take an increased share of the limited consumer food budget. Other opinion has it that the drop has been caused by the cut in the size of loaf.

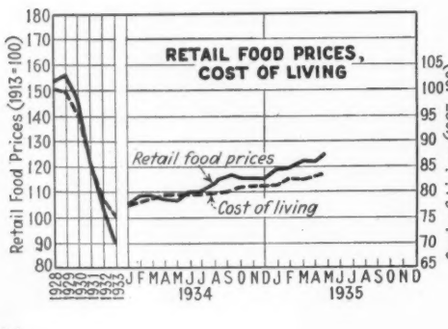
It is to be expected that this continued decrease in the demand for bread will bring forth strenuous efforts on the part of the baking industry to regain some part of its lost market, which can only be done at the expense of other foods.

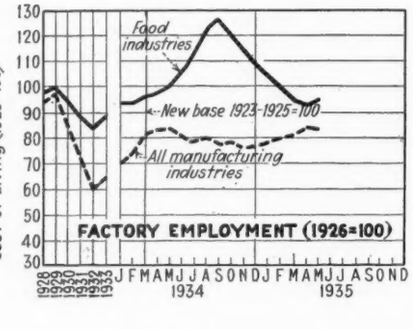
Butter, Eggs Still Fluctuate

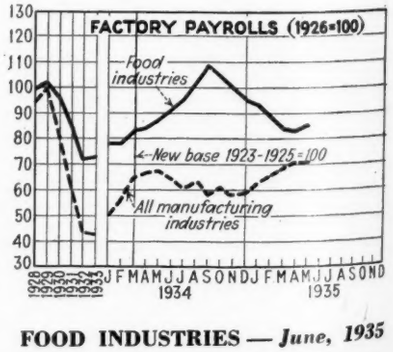
PRICES of butter and eggs continue at unusually high levels for the time of the year, in spite of the fact that the production of both these commodities is again nearing normal levels. Butter imports, encouraged by high butter prices, still continue to enter over the tariff




PRICE INDEX FOR FATS AND OILS
Index Number
Aug. 1909-July 1914=100
New base
All farm products
Fats and oils
1930 1931 1932 1933
J F M A M J J A S O N D J F M A M J J A S O N D
1934
1935


RETAIL FOOD PRICES,
COST OF LIVING
Retail Food Prices (1913=100)
Cost of Living (1923=100)
Retail food prices
Cost of living
1928 1929 1930 1931 1932
J F M A M J J A S O N D J F M A M J J A S O N D
1934
1935


Food industries
New base 1923-1925=100
All manufacturing industries
FACTORY EMPLOYMENT (1926=100)
1928 1929 1930 1931 1932
J F M A M J J A S O N D J F M A M J J A S O N D
1934
1935


FACTORY PAYROLLS (1926=100)
Food industries
New base 1923-1925=100
All manufacturing industries
1928 1929 1930 1931 1932
J F M A M J J A S O N D J F M A M J J A S O N D
1934
1935

Prices Tend to Stabilize

IN THE FACE of Congressional turbulence, with much indecision regarding the future of NRA; of sporadic labor unrest; and of decline in production, particularly in the auto industry, general business activity has continued upward for the third consecutive week since the new 1935 low of late April.

According to the *Business Week* index this business activity has a net increase of 1.75 per cent to 63.8 per cent of normal for the month ending May 18.

With fluctuations through a relatively narrow range, commodity prices have been fairly stable during this same period. A temporary weakening of prices plus the feeling that inflation is coming "around the corner" make for an increased volume of turnover, general merchandising and financing activity which are reflected in the index of general business conditions.

GENEROUS rains throughout the agricultural Middle West, particularly in the 1934 and 1935 drought regions, have bettered the grain crop prospects and caused a weakening in farm product prices. U. S. Department of Labor reports a 0.37 per cent decline in wholesale price of all commodities, 1.10 per cent in farm products and 1.76 per cent in food in the four weeks ending May 18.

However, the *New York Journal of Commerce* index of weighted prices give a rise of 0.38 per cent generally and of 1.22 per cent specifically for foods with a decline of 4.67 per cent for grains.

wall, and the expectation is that this movement will not cease before mid-June.

With ample rains in most producing centers, and the inroads of the 1934 drought rapidly mending, prospects in both these lines is for a return to normal or above normal supply levels. Rapid fluctuations on speculative markets indicate nervousness over the high price levels and seem to presage a drop to lower prices in the near future.

Cattle Nearly Normal

CATTLE and calves on farms, the first of this year were in nearly normal supply, according to G. B. Thorne, head of the livestock division of AAA. The total at this time was 60,667,000 compared to the ten-year average of 61,667,000 and the 1928 figure of 56,701,000. In January, 1934, before the drought and its accompanying slaughter, the number was 68,290,000, about the peak of the current cow cycle, which had been on the upgrade since 1928.

Along with the normal number of cattle and calves, beef supplies are above requirements, particularly in view of the restricted buying caused by increased prices. Storage holdings of beef, exclusive of that held by the Federal Surplus Relief Corporation, were at 78,000,000 lb. on May 1. This was an increase of 67 per cent above 1934, and 54 per cent over the five-year average. In spite of the restricted slaughter of the present time, beef supplies will evidently continue ample and present price levels should not hold.

U.S. Fish Consumption Low

COMPARED to other countries, the United States consumes but little fish and shell fish. Figures of consumption recently compiled by the U.S. Bureau of Fisheries show the following annual per capita consumption of fish and shell fish in various countries:

Country	Annual Pounds Per Capita	Country	Annual Pounds Per Capita
Japan	55	Netherlands	29
Sweden	52	Germany	18
Norway	44	Belgium	17
Denmark	39	Spain	16
Portugal	37	France	14
England and Wales	35	Australia	13
Canada	29	United States	13

One factor in the relatively low consumption of fish in this country seems to be the fact that large sections of the country are relatively far from the source of fresh fish supplies. While New York City per capita consumption is 32 lb., Louisville uses only 5 lb.; and compared to Jacksonville's 18 lb., St. Louis uses only 9 lb. The recent development of express truck shipments of fresh fish to points as far as 1,000 miles from the seaboard indicates that consumption of fish in inland centers will likely increase in the near future.

INDICATORS

COCOA bean imports into New York, Boston and Philadelphia for the first three months of 1935 totaled 1,543,042 bags, compared to 1,049,553 bags for the same period of 1934.

WINE consumption increased 20 per cent in the first quarter of 1935, compared to the same period of 1934, as shown by figures of the Wine Institute.

HOGS, at $10 in Chicago on May 20, reached the highest point since October, 1930. With the processing tax added, the price was $12.25 per 100 lb.

CANNED BEER meets popular approval, if the fact that the Krueger Brewing Co. is 50,000 cases behind in deliveries in its so-far limited distribution area means anything.

FOOD PRICES continue downward, with the Dun and Bradstreet weekly index of wholesale food prices off 3.7 per cent in a month, although 24.9 per cent above the corresponding period last year.

IRREGULAR trade movements are giving way to a more uniform upward trend, according to the mid-May trade review of Dun and Bradstreet, Inc.

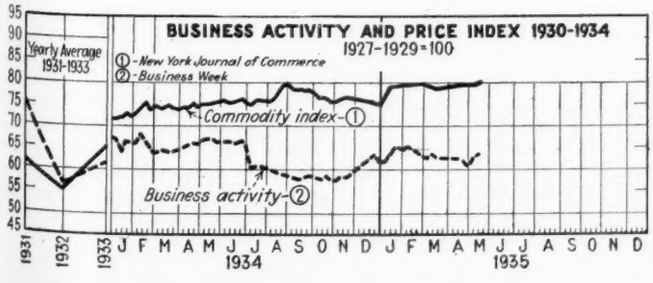
CARLOADINGS continued to rise during each May week, but continued at levels somewhat below 1934.

LEMON SHIPMENTS, under the pressure of a bumper crop, have been forced to increase, to the detriment of the industry, according to the California Fruit Growers Exchange.

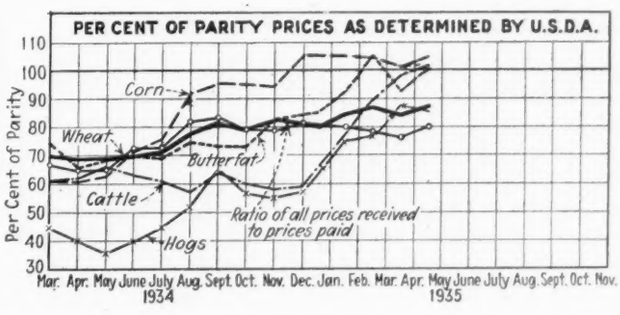
TOTAL melon acreage in the Imperial Valley this year is 28,648 compared to 27,904 last year, and the growing conditions are giving larger melons, forecasting a more plentiful supply.

RELIEF FOODS shipped in April totalled 50,976,883 lb., including about 40,000,000 lb. of meat, reports FERA.

SALAD DRESSING and mayonnaise production figures for 1934, just released by the Department of Commerce, were 29,307,878 lb., up 25 per cent over 1933.



BASIS FOR THE CURVES: Retail food prices, factory employment, factory payrolls and wholesale prices based on indexes of the Department of Labor. Cost of living index is that of the National Industrial Conference Board. Indexes of prices of fats and oils, and of all farm prices are from the U. S. Department of Agriculture, as are the per cent of parity prices.


PER CENT OF PARITY PRICES AS DETERMINED BY U.S.D.A.
Per Cent of Parity
Corn
Wheat
Butterfat
Cattle
Hogs
Ratio of all prices received to prices paid
Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov.
1934
1935

Books Received

THE AMERICAN VEGETABLE SHORTENING INDUSTRY. By G. M. Weber and C. L. Alsberg, Food Research Institute. Published by Food Research Institute, Stanford University, Calif. 1934. 359 pp., 6¼x9 in.; cloth; illustrated. Price $3.50.

As Fats and Oils Studies No. 5, this book traces the origin and economic development of this peculiarly American industry. The eras of its growth are designated as prior to 1890, from 1890 to 1914, and since 1914 to 1932. Numerous charts and graphs illustrate the production, export, price, and consumption trends. A 128-page appendix contains a glossary of terms, history of technology of the compound industry, dissertation on action of shortening, list of registered trademarks, excerpts from U. S. Food Administration reports and regulations, and tables of industry statistics.

THE CHEMICAL FORMULARY VOL. II. H. Bennett, editor-in-chief, D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. 1935. 570 pp., 6x8⅝ in.; cloth. Price $6.

Although covering the same general subjects as Vol. I (reviewed in FOOD INDUSTRIES, June, 1934), the contents of this volume comprise additional formulas and more detailed information on the processes and basic principles involved. As in Vol. I, all formulas covered by patent are so designated and, in the preface, recommendations are made to consider these formulas as the starting points and not the ultimate of work to make products to meet individual requirements.

CAPITALISM CARRIES ON. By Walter B. Pitkin. Published by Whittlesey House, 330 West 42d Street, New York, N. Y. 1935. 282 pp., 5⅜x7⅝ in.; cloth. Price, $1.75.

Contrasted with the communist writings of the desperate under-privileged and the fascist declarations of the thwarted exponents of wealth the contents of this easily readable book focus attention upon the American Middle Class and its economic problems. Damning the trafficking in money as the cause of Capitalism's present as well as past dilemmas the author feels confident that the influence of the Middle Class is purging Capitalism of its sins and has already started it along the sawdust trail.

METHODS OF HANDLING CUSTOMER COMPLAINTS. Prepared and published by Policyholders Service Bureau, Metropolitan Life Insurance Co., 1 Madison Ave., New York, N. Y. 1935. 37 pp., 11x8½ in., paper. Price, free.

Few problems in any business provoke more thought and apprehension than does that of dealing with consumer complaints. If handled correctly these complaints make for good will and a conviction of fair dealing; they become an asset instead of the source of much irritation, loss of profit, and probable loss of customers.

In this reproduction of a typed report of a survey of the practice and routine followed in ten different fields of commercial endeavor, any manufacturer whose products percolate through to the ultimate consumer in identifiable form will find helpful suggestions. Case studies, as well as reproduction of forms used, are included.

ICE CREAM SALES INDEX. Published by International Association of Ice Cream Manufacturers, 1105 Barr Bldg., Washington, D. C., 1935. 40 pp., 6x9 in.; paper; illustrated. Price $1 to nonmembers of association.

An analysis of ice cream sales in United States and Canada during 1934 compared with those of 1933. Included are a condensed climatological summary of temperatures; a graphic presentation of monthly business conditions throughout the United States, and of sales fluctuations for individual states; and a special study of ice cream production and sales from 1920 to 1934 inclusive.

INDUSTRIAL MARKETING. By John H. Frederick, University of Pennsylvania. Published by Prentice-Hall, Inc., 70 Fifth Ave., New York, N. Y. 1934. 401 pp. 6½x9¼ in.; cloth. Price $3.50.

Making a product is one thing. Marketing it successfully is quite something else. As Assistant Professor of Commerce and Transportation, Wharton School of Finance and Commerce, Dr. Frederick writes with authority on the various marketing methods and policies and on media used to stimulate market demand.

ALMANAC OF THE CANNING INDUSTRY. 1935. Published by The Canning Trade, Baltimore, Md. 218 pp., 6x9 in., paper. Price, $1.

For 20 years the canned-foods industry has been supplied with industry statistics, laws and regulations, standards and specifications in reference form by means of this handbook. The Code of Fair Competition for the canning industry is included in this edition.

CEREAL LABORATORY METHODS. Third Edition. Published by American Association of Cereal Chemists, 833 Omaha Grain Exchange, Omaha, Nebr., 1935. 204 pp., 9½x6⅛ in.; cloth; illustrated. Price $3.

Only after one has hunted out, checked, and annotated methods of analyses in the various handbooks, manuals, and current periodicals can he fully appreciate the value of a compilation covering only those methods which have been fully tested and authenticated by thorough-going collaborators in a specialized field.

Such is this hand book of methods which has been completely revised since the second printing of the second edition was made in 1929. Considerable new text has been added and an improvement has been made in the presentation of older material. Ten chapters are devoted to the subjects of Wheat and Other Grains; Feeds and Feeding Stuffs; Wheat Flour, Semolina, and Similar Products; Enzymatic, Physico-Chemical and Miscellaneous Methods; Baking Tests; Baked Cereal Products; Macaroni Products; Fats and Shortening Materials; Leavening Agents, and Yeast Foods, Flour Improvers and the Like. A 60-page appendix is devoted to seventeen tables most commonly referred to by workers in a cereal products laboratory.

Although a publication of the A.A.C.C., this book of methods is available to anyone who feels its need and has the necessary purchase price.

VITAMINS AND YOUR HEALTH. By Margaret Elston Gauger. Published by Robert M. McBride & Co., 4 West 16th St., New York, N. Y., 1935. 102 pp., 7⅜x5¼ in.; cloth. Price $1.25.

Written in a lively and entertaining style, the contents of this little book discuss the practical aspects of vitamin knowledge better than any book on the subject that has yet come to our attention. As one can readily conclude from its title, the book is primarily for the general lay reader, the consumer of food. Nevertheless, food manufacturers, especially those trying to capitalize on the vitamin content of their products, will find it worth reading.

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Letters

Not Multi-Wall Paper Bags

To the Editor of FOOD INDUSTRIES:

In your April issue of FOOD INDUSTRIES there is an article on paper bags with the subtitle "Multi-wall Kraft Paper Bags Cut Shipping Costs and Protect Products." This article is on page 173. On this same page you show Pillsbury's Best Flour packed in a Deltaseal paper bag. The inference that the average person gets, without fully reading the article, is that the Pillsbury Company is using a multi-wall bag. I wish to advise you that we do not care to have this impression exist.—M. A. LEHMAN, Vice-president, Pillsbury Flour Mills Co., Minneapolis, Minn.

Proximity of the Pillsbury flour bag illustration to headline announcing use of multi-wall kraft paper bags to cut shipping costs is thought likely to give impression that the Pillsbury bag is of the multi-wall type. Conveying of such impression was not intended.

On page 174 April FOOD INDUSTRIES, *information is given that the Deltaseal closure is found on bags made from the same quality paper commonly used for 1-lb. coffee packages, 2 to 12-lb. flour bags, and 2 to 5-lb. cornmeal bags, having a twisted wire or heavy string tie closure.*

According to information supplied by paper bag makers, the paper commonly used for the coffee, flour and meal bags is of the white-coated kraft quality with or without a blue inner surface. —Editors.

Things Have Happened

- ***Senatorial compromise drops barriers to food bill***
- ***AAA amendments still put food processors on spot***
- ***Packers and bakers act to block processing taxes***
- ***Chemists discuss developments in food technology***
- ***Southern bakers hold most instructive convention***

Food Bill To Pass

CONSIDERED a dead issue at the close of April, the Copeland Bill was conceded late last month to be scheduled for enactment at this session of Congress. This reversal of the situation was brought about by a compromise between Senator Copeland and Senators Clark and Bailey. The Bailey amendment to eliminate multiple seizures has been compromised to provide for multiple seizures where the product involved is dangerous to health.

The food industry has been more or less satisfied with the bill for some time, and the drug people are said to be agitating for its passage now, fearing something more stringent if they wait until next session. After the Senate passes the bill, it is predicted that the Administration will shoot it through the House, spiking fights against its liberalization. Passage is expected to take place early this month.

Effective lobbying on the part of women's organizations is credited with having much to do with the change in viewpoint on the part of the senators.

Balk on Processing Taxes

AFTER suffering in silence for many months, meat packers and bakers are contesting the processing taxes. The first court attack on the processing tax on hogs has been made by trustees of A. Fink & Sons, Newark, N. J. They introduced a motion in a federal court to disallow a claim against the estate for $612,483 in processing taxes. The court reserved decision.

Another packer, John A. Gebelin, Inc., Baltimore, applied for an injunction to restrain the government from taking any action against the company for failure to pay the processing tax. Frank A. Hunter, president of Hunter Packing Co. and chairman of the Institute of American Meat Packers, recently asked relief from the processing taxes on the ground that the purchasing power of agriculture has been restored.

Several suits to restrain assessment of the processing tax on hogs are said to be pending.

At the instigation of Larsen Baking Co., Brooklyn, N. Y., a petition to repeal the processing tax on flour has been circulated among bakers. It is hoped to obtain 20,000 to 25,000 signatures. Resolutions protesting continuance of a processing tax on flour were passed at recent annual conventions of New York State and Southern bakers.

HEADS SPICE TRADE

George M. Armor, president of McCormick & Co., Inc., Baltimore, was elected president of American Spice Trade Association at its recent New York convention. At this meeting it was pointed out that the use of spices might be increased by educating the American people to the enjoyment of fine-flavored foods.

A & P Likes A,B,C Labels

PROPONENTS of A,B,C labels for canned goods have scored a point against those favoring descriptive labeling. Great Atlantic & Pacific Tea Co. has decided to extend its use of the "alphabetical" grades. The first company to adopt the type of labels advocated by the Administration, A & P last fall began putting them on peas, corn, tomatoes and string beans. Now the company extends this to beets, lima beans, pumpkin, squash, spinach, ketchup, apple sauce, tomato juice and sauerkraut. The management feels this is justified by the sale of nearly a million cases of the A,B,C labeled foods.

To make its labels even more effective, A & P wants to use A, B, C grades made official by the government.

Spills Milk in Boston

ANOTHER federal milk license has hit the dust, throwing dirt in the eyes of AAA. A United States district court judge ruled on May 17 that the license for the Greater Boston milk market is void and unenforceable. The reason for the decision was, as in past cases of this nature, that the Agricultural Adjustment Act gives the Administration no power to regulate intrastate commerce.

Amendments May Pass

WITH the AAA amendments on the Administration's "must" calendar, they would appear to have a fair chance of enactment at this session of Congress. The House Committee on Agriculture reported with recommendation for passage that body's latest edition of the amendments. Known as bill H.R. 8052, the proposed amendments are full of dynamite for the processor. They are virtually what the Administration wants except that retailers, other than retailers of milk and its products, are exempt from licensing. The amendment permits the Secretary of Agriculture to license processors and to examine their books and records. Among the basic commodities which may be licensed are milk and its products and sugar beets, while fruits and vegetables are included in the non-basic ones coming under the amendments. In the Senate, the provisions remain about the same as those originally advocated by the Administration.

McNary-Mapes Revision

NEW standards for canned foods have been issued by the Food & Drug Administration, to become effective July 24. These include standards for canned peaches, pears, apricots, cherries, to-

matoes, peas and dry peas; the standard fill of containers; and the forms of statements which must appear on sub-standard products. A 17-page mimeographed bulletin outlines in detail all the new requirements.

Constituting a third revision of the McNary-Mapes regulations, the new standards contain a number of changes in phraseology but few alterations in the requirements themselves.

New Facts on Foods

SEVERAL new developments in the chemistry and technology of foods were covered in papers presented at the recent annual convention of the American Chemical Society. Dr. William D. Horne, who discussed work done on levulose, told the chemists that this type of sugar, which is one and one-half times as sweet as cane sugar, may become commercially available as a result of work done by the Bureau of Standards. Already, a semi-commercial plant with a capacity of 1,000 lb. daily has been equipped to make the product. In manufacturing levulose, the juice of Jerusalem artichokes is slightly acidulated with sulphuric acid, treated with lime, filtered, chilled, treated with milk of lime and agitated to form crystals of calcium levulate. After removal by filtering, the crystals are suspended in water and treated to precipitate carbonate of lime and leave levulose in solution.

The effect of colored transparent cellulose wrappers in retarding rancidity in oil-bearing foods was discussed by William L. Morgan, Sylvania Industrial Corp., New York. Scientific tests show, according to Mr. Morgan, that the degree of protection does not depend entirely upon the color of the material. There were found to be very poor and very good reds, greens, yellows and so forth. "Whole series of yellow sheets could be practically identical in color and yet vary in rancidity-retarding value from no protection at all to protection exceeding any of the commercially available green wrappers," Mr. Morgan said.

Of particular interest to canners, in view of the trend toward more informative labeling, is a chemical method discussed by Dr. Z. I. Kertesz, New York State Experiment Station, Geneva, for determining the quality of canned peas. Described by Dr. Kertesz in FOOD INDUSTRIES, April, 1934, the method involves the determination of the tenderness and maturity of peas by measuring the alcohol-insoluble solids.

The influence of gelatin upon the curd tension of milk was the subject of a paper by Lloyd K. Riggs and Annabel Beaty, Rutgers University. They reported that curd tension is reduced about 50 per cent by the modification of milk with 1.0 per cent of gelatin of 200 jell strength.

The results of antioxidant tests with vitamin A were presented by Harry N. Holmes, Ruth E. Corbet and Eva R. Hartzler, Oberlin College. Experiments with halibut liver and cod liver oils indicated that with some oils lecithin alone is superior to hydroquinone but that a combination of the two is vastly superior to either. Egg lecithin gave the same results as soy bean lecithin.

Several papers covered progress in the development and effectiveness of non-biological methods of determining vitamin potency and showed that certain methods are quite effective for certain vitamins.

PRESIDENT SPEAKS TO WALLACE'S FRIENDS

President Roosevelt, on the White House portico, as he addressed 4,484 Midwestern and Southern farmers who gathered at the Capitol on May 14. The agriculturists convened at the nation's headquarters to demand a continuation of AAA and of the benefit payments made possible by taxes levied against food processing.

Bakers Air Troubles

BAKERS below the Mason-Dixon line heard some enlightening discussion on their industry's problems at the 21st annual convention of the Southern Bakers Association at Birmingham, May 6-8. Henry Stude, true to past performances, upheld the value of the industry code and ventured the assertion that if the NRA is done away with bakers might be placed under more drastic regulation. Gordon Smith, past president of the association, advised the use of shorter pan lengths, saying that the tendency on the part of members of the industry to outdo each other in the length of loaf often resulted in an inferior product. When bread is over proofed to fill the longer pan, it does not taste as well nor keep as long, he said.

F. B. Evers, new president of American Society of Bakery Engineers, discussed reasons for the decline in wheat consumption from 230 lb. per capita in 1900 to 160 lb. in 1930. Among other things, he said that propaganda put out by food faddists had been left too much unanswered. He also criticized the industry for lengthening the loaf to get more slices at the expense of flavor and for selling thinly sliced bread which goes farther on the consumer's table. W. E. Long, Chicago, advised elimination of selling on consignment, saying that this practice tends to put stale bread into consumption. He also advised the bakers to cater to changes in consumer tastes and devise new products to recapture the lost market.

Speaking on the important subject, "How Can We Make Them Eat More Bread?", Russell W. Varney, Standard Brands, Inc., suggested that the bakers show new ways to use their products.

Before the convention adjourned, a resolution was passed protesting the processing tax on wheat.

Flash — NIRA Dies

A LAST MINUTE EDITORIAL

NIRA, the backbone of the New Deal, has been declared unconstitutional by the highest court in the land, from which there is no appeal. Until the verdict was rendered it was firmly believed that it would be merely a guide to revision of the law to make it consistent with the Supreme Court's decision. And hence the ruling was expectantly awaited by the New Dealers as a harbinger of better things.

But the court's decision makes it very difficult, if not impossible, to redraft anything like NIRA. At the time of writing there seems to be no likelihood of a modified NRA, nor does it seem possible that the Black-30-hour bill or the Wagner bill could be written in a form that would be upheld by the Supreme Court. Likewise the fate of the AAA amendments is now in serious doubt.

The decisions restore business to a firmer foundation. They restore the expansion joints so necessary in any complex economy such as American business and industry. They also have the effect of placing the cart behind, instead of before the horse, for under NRA it has always seemed to be the theory that if costs could be pushed up high enough good business would result. The New Deal has overlooked the fundamental fact that there is no possible way to make people buy.

Nevertheless, in the new found freedom of business it is imperative that we recognize our moral obligation to hold on to the few benefits that have arisen from NRA.

Above all, business must not rock the boat. Any changes of policy toward wages and hours should be very carefully considered before putting them into effect. A month or two of deliberation, supplemented by conferences with others in the same trade, should precede any marked change.

Remember—business has readjusted itself to present wages and hours. It took nearly two years to do it. Another two years of readjustment may be needed if any ill-considered moves are made that precipitate another downward spiral.

The Southern bakers elected as president J. Roy Smith, vice-president and general manager of Smith's Bakery, Mobile. Charles T. Fuchs, Fuchs Baking Co., South Miami, was chosen vice-president; and J. B. Everidge, Everidge Baking Co., Inc., Columbus, Ga., treasurer.

Dairy Industry Troubles

ANOTHER milk-industry investigation has been started by the Federal Trade Commission. Having been given another appropriation of $110,000, the FTC started delving into the whys and wherefores of the Chicago milk shed on May 16. Investigations already have been completed in Connecticut and Philadelphia, the Commission's report being anything but favorable.

The dairy products industry also is suffering from another investigation. Following the Federal Trade Commission's charges that International Association of Ice Cream Manufacturers used high-handed tactics to stifle the use of counter freezers, Mills Novelty Co., Chicago, filed action for treble damages amounting to $46,929,995.12. The action is directed against some 80 defendants, among whom are National Dairy Products Corp., Borden Co., Beatrice Co., and Golden State Co., Ltd.

Beet Fight Ends

THE ANNUAL CONTROVERSY between sugar beet growers and Great Western Sugar Co. appears to be at an end for another year. An executive of the company reports that more than 30,000 acres have been contracted for, despite opposition on the part of Nebraska Cooperative Beet Growers Association. And it is predicted that 50,000 acres finally will be planted. The growers organization had previously ordered members not to grow beets under the contract offered by Great Western, owing to disagreement on various provisions of the contract.

As a result of this controversy a Senatorial investigation of the sugar beet industry is sought in a resolution introduced by Senator Murray of Montana. The investigating committee would recommend legislation that would do away with such difficulties in the future. But now that the trouble is over for this year, the matter may be forgotten.

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Conventions

JUNE

2-4—New England Bakers Association, semi-annual, New Ocean House, Swampscott, Mass. Robert E. Sullivan, 177 Milk St., Boston, secretary.
3-5—Flavoring Extract Manufacturers Association of the United States, Lake Shore Athletic Club, Chicago.
3-7—Association of Operative Millers, annual, St. Louis. C. W. Partridge, 522 Board of Trade, Kansas City, Mo., secretary.
3-11—National Confectioners Association, annual, Palmer House, Chicago.
4-7—American Association of Cereal Chemists, annual, Denver. M. D. Mize, 833 Omaha Grain Exchange, Omaha, Neb., secretary.
17-19—National Macaroni Manufacturers Association, Hotel St. George, Brooklyn, N. Y. M. J. Donna, Braidwood, Ill., secretary.
25-27—American Dairy Science Association, University of Minnesota, St. Paul.

JULY

9-11—National Confectionery Salesmens Association of America, Statler Hotel, Buffalo. Henry H. Michaels, 282 Northern Ave., New York, secretary.
10—National Kraut Packers Association.

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Concentrates

OLEOMARGARINE made from foreign oils would be taxed 10 cents a pound under legislation introduced in the House by Representative Kleberg (Texas) . . . A tariff of 21 cents a pound on imported butter has been asked of Congress by the Wisconsin senate . . . A bill providing for enforcement of the federal filled-milk act of 1923 has been introduced in the House.

AAA OFFICIALS deny the rumor that a $25,000,000 butter-stabilization program will be embarked upon if the AAA amendments are passed . . . Legislation to extend the Jones-Costigan sugar law from May 9, 1936, to Dec. 31, 1937, is before Congress . . . The evaporated milk marketing agreement was terminated May 31.

THREE SALT COMPANIES have been ordered to stop using the words "smoke" or "smoked" unless the salt is subjected to smoke from burning wood . . . W. F. Straub & Co., Inc., Chicago, has promised FTC to cease the use of "non-fattening" in honey advertising . . . Standards of identity for brewery products are being worked out by FACA.

NATIONAL CANNERS ASSOCIATION fears turmoil in its industry if NRA dies. The association is seeking exemption of fruits and vegetables from the AAA amendments . . . Paul S. Willis, president of A.G.M.A., advises fewer premiums and more selling on a quality basis.

FLOUR not packed in units which are multiples of the standard weights (196, 98, 48, 24, 12 and 6 lb.) will not be legal in Mississippi after July 1 . . . The fluid-milk industry has been designated a utility in Wisconsin and is subject to state price control for two years.

CLAIMS as to the laxative qualities of food have been barred in California . . . Recent legislation in New York and Maryland prohibits the resale of trademarked or branded goods except at the price stipulated by the vendor . . . Alabama's attorney general has ruled that a corporation adding chocolate syrup to milk and bottling it in the same manner as milk does not need a soft-drink license.

Men . . . Jobs . . . and Companies

Industry

• ARMOUR & Co. recently opened a $75,000 sausage factory at Cleveland, put into operation a cheese and egg plant at Chickasha, Okla., and established a branch house at Hannibal, Mo. The company also plans to erect a $350,000 milk plant at Union City, Tenn., it is reported. Armour has dropped negotiations for acquisition of Jacob E. Decker & Son, Mason City, Ia. The company plans to refund $50,000,000 of bonds into obligations with lower coupons.

• BALLARD & BALLARD recently began operations at a new flour-blending plant at Mobile, Ala. M. C. Atherton is manager.

•CALIFORNIA PACKING CORP. will spend about $500,000 improving and expanding its pineapple-canning facilities in Honolulu.

• CALIFORNIA FRUIT GROWERS EXCHANGE, Los Angeles, is constructing a seven-story, $350,000 headquarters, to be completed Jan. 1.

• PETER CAILLER KOHLER SWISS CHOCOLATE CO., INC., has awarded contracts for a $40,000 addition to its Fulton, N. Y., plant. New machinery and equipment will be installed.

• CAUSSE MANUFACTURING & IMPORTING CO., Bound Brook, N. J., has purchased from Rheinstrom Bros. Co., Cincinnati, its "Rosebud" brand and all equipment and formulas pertaining to glacé fruits, peels, maraschino-type cherries in glass, dipping cherries and marshmallow topping.

• CROSSE & BLACKWELL CO. is adding creamed soups to its canned-foods line. The company recently established a branch at New Orleans.

• CUDAHY PACKING CO. is spending $160,000 in remodeling and enlarging its plant at Omaha. A sanitary oleo oil refining plant and a remodeled pork freezing plant are among improvements.

• DEE-HY LAKE MILLS (Wis.) CO., will put into operation about June 1 what it considers the world's largest milk-powdering plant.

• FORTUNE-ZEREGA CO., Chicago, has dissolved into two companies representing the Fortune and Zerega interests, respectively. Fortune Co. continues to operate the Chicago plant. A. Zerega & Sons, Inc., will make its products in the plant of Foulds Milling Co.

• GLENDALE FARMS, INC., Newark, N. J., recently completed a $120,000 distributing plant.

• ADOLF GOBEL, INC., Brooklyn, N. Y., recently filed petition for bankruptcy under Section 77b of the bankruptcy laws, which enables a solvent corporation to work out in an orderly manner a plan to meet maturing notes and at the same time continue operating in a normal way.

• INTERNATIONAL MILK CO., INC., will build a $100,000 plant at Hillside, N. J.

• KRAFT-PHENIX CHEESE CORP. will open a new plant at Thomasville, Ga., about June 1. The company is moving its Omaha branch into larger quarters.

• THE MANNING coffee roasting plant and warehouse at Los Angeles were completely destroyed by fire recently with damage estimated at $200,000.

SCOTT A. HOLMAN

With Libby, McNeill & Libby for 24 years, he now becomes a vice-president in charge of the Eastern pickle and condiment and vegetable division with headquarters at Chicago. He has served the company successively as salesman, manager at Baltimore, assistant general sales manager, Western general sales manager and manager of the Eastern sales division.

• PET MILK CO. will construct immediately a new plant at Fremont, Ohio.

• SOUTHERN DAIRIES, INC., Washington, D. C., has awarded a contract for a $150,000 plant at Atlanta.

• SWIFT & Co., Chicago, will issue $50,000,000 first-mortgage, 3¾-per cent bonds to replace a similar amount of 5-per cent bonds of 1944 and 5-per cent gold notes of 1940. The company has obtained listing on the New York Stock Exchange.

• GEORGE E. WALKER & SONS, Grand Rapids, Mich., has purchased the Libby, McNeill & Libby pickle stations at Wayland, Shelbyville, Hopkins and Hilliard, Mich.

• WALLACE, BURTON & DAVIS CO. has purchased control of Max Ams Inc., New York, manufacturer of preserves, jellies and pie fillings. John A. Filsner, president of Max Ams remains in an advisory capacity.

• WILSON & Co. has taken over the Chicago plant and business of Hygrade Food Products Corp. The plant has an annual capacity in excess of 400,000 hogs.

Personnel

• W. L. BEATTY, for many years with Cudahy Packing Co., has joined the Chicago staff of Hills Bros. Co.

• RAY G. CUMMINGS becomes car route manager for John Morrell Co. at Cleveland.

• G. H. DAMSEL has been appointed manager of Armour & Co.'s plant at South St. Joseph, Mo.

• WALTER R. GLEASON now is Chicago manager for Tobin Packing Co.

• H. M. HANNUM succeeds the late J. L. Russell as manager of Kingan & Co.'s San Francisco branch.

• PAUL HART, former manager of Marshall Canning Co. plant at Waverly, Ia., has taken a similar position with Atlantic Canning Co. He is succeeded at Waverly by Peter Cordt, Jr., who had been manager of the Marshall plant at Hampton, Ia.

• HOWARD HEINZ, president of H. J. Heinz Co., Pittsburgh, has been re-

elected chairman of National Industrial Conference Board.

• ARTHUR D. HYDE has been appointed director of manufacture of General Mills, Inc., Minneapolis.

• F. LOWDEN JONES recently became general manager of the Walla Walla (Wash.) Canning Co., and he continues to serve also as treasurer.

• F. E. KING has been made assistant managing director of the code authority for the candy-manufacturing industry.

• FRANK KOBAK, president of Metro Chocolate Co., Brooklyn, N. Y., heads up Association of Manufacturers of Confectionery and Chocolate of the State of New York.

• BENJAMIN LEWIS, Boston, operator of several New England wholesale meat houses, has established his own packing plant at Omaha under the name Lewis Packing Co.

• JAMES LYMAN has been named general manager of Traverse City (Mich.) Canning Co. He has been a canner for 22 years.

• EARL MIDDLEKAUF has been made general manager of Graham Ice Cream Co., Omaha. He has been in the business 23 years.

• JOHN T. MCCARTHY, formerly vice-president of Purity Baking Co., Chicago, and president of Cushman's Sons, Inc., New York, now is president and general manager of Jersey Bread Co., Toledo, having succeeded the late Frank C. Hoehler.

• E. T. OAKES has been promoted from assistant production manager to production manager of National Biscuit Co., New York. James R. Henry, formerly production manager, becomes general manager of the Los Angeles bakery.

• JAMES L. OLIVER, secretary of American Bottlers of Carbonated Beverages, now is code director for the bottled soft drink industry, replacing W. Parker Jones, who continues as legal counsel.

• D. T. PERRY, Colonial Cake Co., San Antonio, has been chosen president of Texas Bakers' Association.

• R. A. RIGHTMIRE has become Chicago manager of W. S. Quimby Co., coffee roasters, replacing George W. Burt.

• L. D. SNOW becomes manager of the Lever Bros. plant at Hammond, Ind., succeeding Vernon Bruce.

• HENDERSON SUPPLEE, JR., recently

MARCUS M. MUNSILL

A great-grandson of Gail Borden, who founded Borden Co. in 1857, he is one of two new directors of his grandfather's company. Lester LeFeber is the other, he being president and a director of Gridley Dairy Co., Milwaukee, and of Racine (Wis.) Pure Milk Co., Inc.

was made general manager of the ice cream department of Supplee-Wills-Jones Milk Co., Philadelphia. He succeeds Joseph Potts, resigned. He is the son of the late C. Henderson Supplee.

• HERBERT N. SWIFT, Providence, has been elected chairman of the recently organized Rhode Island branch of Institute of American Meat Packers.

• EDWARD WERTHHEIMER, for two years manager of the Hoboken, N. J., plant of Continental Baking Co., has been put in charge of the company's plant in Westchester, N. Y. Bernard G. McNary succeeds him at Hoboken.

Deaths

• J. K. ARMSBY, a founder of California Packing Corp. and former president and chairman of the board, at San Francisco, May 1.

• JOHN H. BALL, SR., 56, vice-president of Allied Mills Co., executive vice-president of Southern States Cooperative Mills, Inc., and vice-president of Farmers National Grain Corp., at Baltimore, May 2.

• ARTHUR C. BEAL, 50, plant superintendent of Landy Ice Cream Co., Providence, R. I., May 7.

• JOHN B. DAVITT, 70, founder of California Baking Co., at San Francisco, April 30.

• JOHN FORREST, 66, prominent for many years in the baking industry at South Boston, at Quincy, Mass., May 10.

• GEORGE F. GRUBER, 67, with Habitch, Braun & Co., Chicago, and for 50 years in the candy business, at Pittsburgh, recently.

• JOE HAWKS, in charge of cake production at Williams Baking Co., Scranton, Pa., May 10.

• RUDOLPH A. HUBER, 57, vice-president and treasurer of Anheuser-Busch, Inc., at St. Louis, May 1. He was a member of the brewery code authority.

• J. O. MORRIS, 63, general manager of Fishermen's Packing Corp., Everett, Wash., at Seattle, recently.

• GOTTFRIED PIEL, 82, one of the founders of Piel Bros.' Brewery, Brooklyn, N. Y., May 1.

• ANTONIO ROBBIO, 56, co-founder of Sunshine Ice Cream Co., Providence, R. I., May 13.

• JOHN J. SCHORR, 58, president of Schorr-Kolkschneider Brewing Co., St. Louis, April 30.

• ERNEST SMITH, 72, for many years San Francisco executive of Swift & Co., recently.

Associated Industries

• BROWN INSTRUMENT CO. and Minneapolis-Honeywell Regulator Co. have opened a joint office in Atlanta.

• FRICK CO., INC., announces twelve new distributors in the following cities: Atlantic City, N. J.; Wilkes-Barre, Pa.; Wytheville, Va.; Raleigh, N. C.; Birmingham; Cleveland; Des Moines; Phoenix, Ariz.; Wenatchee, Wash.; Harrisburg, Pa.; and Kelowna, B. C., Canada.

• READ MACHINERY CO., INC., announces appointment of Clyde S. Buckingham as representative in southeastern Pennsylvania and the employment of W. S. Cain as Nashville representative.

• MERCK & CO., INC., recently suffered a $75,000 to $100,000 loss when its Philadelphia plant was wrecked by fire and explosion.

• REO MOTOR CAR CO., Lansing, Mich., has made C. A. Triphagen general sales manager.

• WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J., has appointed J. E. Holveck as special sales engineer, operating from Pittsburgh.

PATENTS

Meat-Cheese Loaf Prepared by Covering the Meat Portion With a Plastic Cheese—Clinton H. Parsons to Swift & Co., Chicago, Ill. No. 1,993,621. March 5, 1935.

Activated Carbon Used in the Preparation of Beer and Ale Wort—Leo Wallerstein, New York, N. Y. No. 1,994,494. March 19, 1935.

Suspension of Homogenized Sweet Milk and Yeast Stabilized by Addition of One per cent of a Stabilizing Agent—Louis Warncke, Weehawken, N. J., to Charles L. Patterson. No. 1,994,496. March 19, 1935.

Pineapple Juice Treated With Alkaline Compound of an Alkali Earth Metal for Selective Separation of Organic Impurities and Recovery of the Citric Acid Salt Formed—Ashton T. Scott, Radnor, Pa., to the Sharples Specialty Co., Philadelphia, Pa. No. 1,994,670. March 19, 1935.

Enzymic Catalyzed Oxidation of Edible Fats and Oils—Louis W. Haas, Chicago, Ill., and Herbert Otto Renner, Des Plaines, Ill., to J. R. Short Milling Co., Chicago. Ill. No. 1,994,992. March 19, 1935.

Bakery Doughs Bleached by the Addition of Enzymic Oxidized Fatty Materials—Louis W. Haas, Chicago, Ill., and Herbert Otto Renner, Des Plaines, Ill., to J. R. Short Milling Co., Chicago, Ill. No. 1,994,993. March 19, 1935.

Cob Butts Mechanically Removed From Green Corn—Samuel E. and William W. Morral, Morral, Ohio. No. 1,995,074. March 19, 1935.

A Non-bleaching Solid Seasoning Composition Containing Sodium Chloride, Colored Oleoresins of Capsicum, and Stabilizing Agent—Carroll L. Griffith and Lloyd A. Hall to the Griffith Laboratories, Inc., Chicago, Ill. Nos. 1,995,119; 1,995,120, and 1,995,121. March 19, 1935.

Non-hydroscopic Powdered Molasses Residue Prepared by Addition of Pulverulent Limestone—Harry C. Reiner, Clayton, Mo. No. 1,995,519. March 26, 1935.

Frozen Food Storage and Display Units Refrigerated to Desired Low Temperature by Atomized Liquid Refrigerant—Mikail Trofim Zarotschenzeff, London, England, to American "Z" Corp., New York, N. Y. No. 1,995,729. March 26, 1935.

Vinegar

(Continued from page 277)

The sparger distributes the mix uniformly over the top of the shavings from where it trickles through the bacterial laden shavings to the bottom of the tank, to complete one cycle of circulation. This process is repeated over and over until the entire mix of diluted alcohol has been changed to acetic acid. While the mix is trickling through the shavings, a regulated amount of air enters through the intakes near the bottom of the tank and passes up through the mass of shavings counter flow to the trickling mix. During this passage large volumes of oxygen are required to oxidize the alcohol into acetic acid. The butterfly valve in the vent pipe leading from the top of the closed generator to the outside atmosphere controls the quantity of air admitted to the generator. Heat generated in the oxidizing process as the mix trickles down through the shavings makes necessary the use of the cooling coil to bring the mix to the proper temperature before it is returned to the top of the generator to repeat its trickling course through the bacteria-laden shavings. Otherwise the temperature in the generators would become so high that the bacteria would be inactivated and probably actually destroyed. When the entire mix has reached the proper acidity for 105 grain vinegar, it is drawn off. About 200 gal. is left in the generator to keep the circulating pump primed and running constantly to supply the bacteria with food until a new batch can be started. A new mix is immediately pumped into the generator, and the circulating process begins again.

IN the main, there are three important means of controlling this process: 1. by maintaining a metered rate at which the mix is circulated; 2. by regulating the metered flow of water to cool the mix to the optimum temperature, and 3. by the quantity of air allowed to enter the generator.

Thermometers indicating the temperature of the mix at different points in the generator are in plain view of the operator as are the flow meters on both the mix and the cooling water. The air intake is adjusted so that the CO_2 content of the air as it leaves the top of the generator is kept within definite limits.

The average time required to generate a batch of 2,500 gal. of 105 grain vinegar is from 8 to 10 days. The generator can be operated continuously at this rate 365 days of the year. The Frings generator is indeed a unique piece of equipment, and, because of its simplicity, its ease of control, and its low cost of operation, is a credit to its inventor and a very marked forward step in the manufacture of commercial vinegar.

A SUMMARY of the advantages the giant generator has over the small generator includes some which make for better quality and some for cheaper production.

Each of these generators has the capacity of 30 small generators, hence the saving in space alone is no small item.

Each tank is air-tight, consequently there are no acid fumes in the room to cause the corrosion of metals or to attack the walls and other apparatus in the building.

There is but one generator to watch; one single sparger to inspect and clean; one examination of alcohol, acid, temperature, and flow, to be made; one regulation of air supply and mix flow as compared with 30 when the usual small generator is used. All of this makes for more efficient operation.

The sealed construction of the generator prevents losses by evaporation and escaping vapors and results in a higher yield from the raw material.

Room temperature does not affect the generator; hence we have uniform operations both winter and summer. This is not the case when temperatures in the generator are not under mechanical control.

Because a much larger volume of mix is passing through the shavings continuously, there is very little, if any, tendency toward sliming.

Paint

(Continued from page 270)

white or light-tinted paint will aid in keeping interiors of galvanized metal buildings cooler in hot weather. Composition wood or paper roofs are best preserved and water-proofed by the use of good grade coal-tar roof paints and cements. Such coatings withstand the heat of the sum without drying out, and are resistant to fumes and other adverse conditions. Liquid roof cements combining pitches, oil and long asbestos fibers will be found particularly satisfactory for badly worn roofs.

SELECTION of the right type of finish of a good grade is fundamental to achieving the desirable attractive appearance, lasting serviceability and reduced operating and maintenance costs. It is a means of cutting lighting costs, reducing accidents, increasing operating efficiency, improving employee morale, enhancing the appearance of the building, and most important of all, proper painting procedures afford better control of food preservation, processing and the final quality. Leading paint manufacturers have established a free service in preparing painting standard and procedure charts for firms desiring to put painting on a scientific production and cost basis and in the last analysis they are the simplest and best answer to effective painting.